Vol. 925 Number 1

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of the

UNITED STATES PATENT OFFICE

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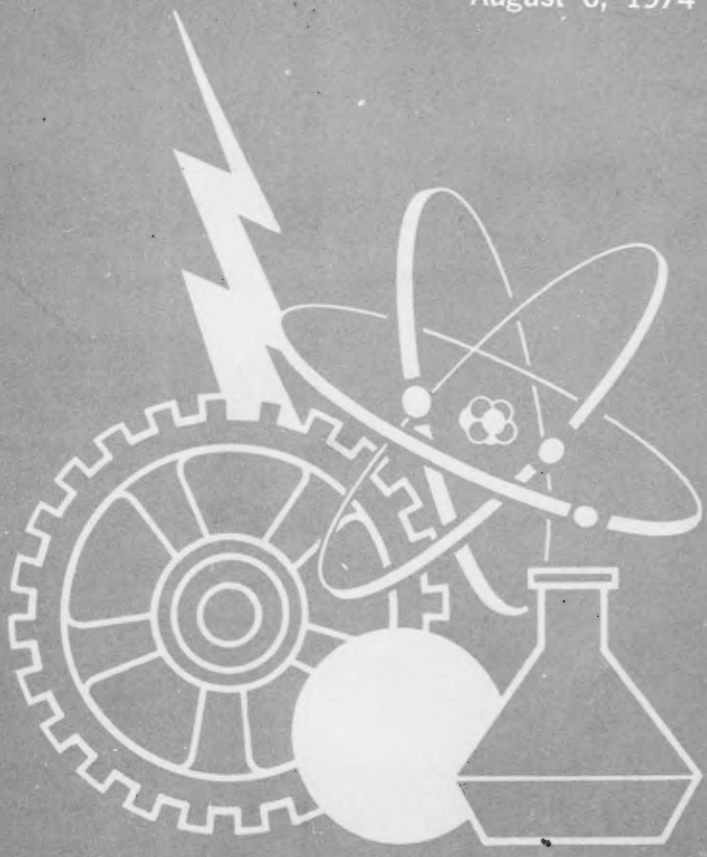
PATENTS

August 6, 1974



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 6, 1974 Volume 925 Number 1

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PATENT OFFICE NOTICES

Interference Record

It has come to the attention of the Patent Office that some practitioners have misinterpreted Rule 253 as requiring that a set of copies of documentary exhibits be submitted as a part of each copy of the record (a total of four sets). To clarify the intent of the rule in this respect, it should be noted that paragraph (c) of Rule 253 requires only that each copy of the record contain the following:

The testimony presented by the party concerned;
A copy of the counts of the interference;
A copy of the preliminary statement of the party concerned; and
An index of exhibits.

Only one set of exhibits need be submitted.

GEORGE W. BOYS,
July 11, 1974. *Chairman, Board of Patent Interferences.*

Use of Metric System of Measurements in Patent Applications

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research prior art search documents, all patent applications are strongly encouraged to use *either* (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

Certificates of Correction for the Week of Aug. 6, 1974

Re. 27,790	3,741,560	3,769,255	3,784,442
Re. 27,909	3,741,580	3,770,019	3,784,579
Re. 27,923	3,742,277	3,770,140	3,784,598
Re. 27,947	3,742,340	3,770,345	3,784,617
Re. 27,960	3,742,369	3,770,363	3,784,619
D. 226,446	3,742,372	3,770,581	3,784,622
D. 228,437	3,744,037	3,770,648	3,784,737
D. 228,479	3,744,146	3,771,487	3,784,863
D. 229,029	3,744,183	3,771,490	3,784,979
D. 230,571	3,744,235	3,771,901	3,785,097
3,456,209	3,744,312	3,771,938	3,785,102
3,489,411	3,744,494	3,772,046	3,785,291
3,537,342	3,744,515	3,772,178	3,785,464
3,540,884	3,744,908	3,772,330	3,785,481
3,557,058	3,744,948	3,772,390	3,785,666
3,586,711	3,745,071	3,772,517	3,785,757
3,593,077	3,745,269	3,772,595	3,786,756
3,616,840	3,745,418	3,773,351	3,787,141
3,628,601	3,745,505	3,773,604	3,787,189
3,632,441	3,745,569	3,773,613	3,787,283
3,634,588	3,746,333	3,773,663	3,787,363
3,649,493	3,746,700	3,773,896	3,787,453
3,651,062	3,747,075	3,774,078	3,787,504
3,662,083	3,747,645	3,774,116	3,787,715
3,662,672	3,747,703	3,774,160	3,788,089
3,663,062	3,747,730	3,774,180	3,788,330
3,672,002	3,748,467	3,774,407	3,788,407
3,674,794	3,748,986	3,774,815	3,788,425
3,682,953	3,750,251	3,774,868	3,788,771
3,683,092	3,750,703	3,775,112	3,789,414
3,684,626	3,750,887	3,775,517	3,789,494
3,686,162	3,751,058	3,775,562	3,790,375
3,686,294	3,751,554	3,775,612	3,790,690
3,687,929	3,752,619	3,776,473	3,790,765
3,689,265	3,753,007	3,776,481	3,791,065
3,689,401	3,753,380	3,776,682	3,791,134
3,689,571	3,753,974	3,776,792	3,791,382
3,689,649	3,755,727	3,776,961	3,791,653
3,691,531	3,755,914	3,776,990	3,791,918
3,694,270	3,756,099	3,777,020	3,792,135
3,698,618	3,756,514	3,777,087	3,792,652
3,698,918	3,758,295	3,777,360	3,792,836
3,699,109	3,758,424	3,777,379	3,792,954
3,707,395	3,758,692	3,777,385	3,793,239
3,707,908	3,759,815	3,777,593	3,793,292
3,708,662	3,760,584	3,777,778	3,793,379
3,708,987	3,761,013	3,778,504	3,793,413
3,709,112	3,761,458	3,778,527	3,793,517
3,711,472	3,761,810	3,778,612	3,793,745
3,711,738	3,762,312	3,778,816	3,793,752
3,714,768	3,762,677	3,778,852	3,793,964
3,720,558	3,763,227	3,778,939	3,794,815
3,723,348	3,763,409	3,779,351	3,794,981
3,725,017	3,763,683	3,779,474	3,795,138
3,725,479	3,763,686	3,779,525	3,795,785
3,725,843	3,764,259	3,780,136	3,795,889
3,726,870	3,764,576	3,780,173	3,796,014
3,727,153	3,764,602	3,780,251	3,797,623
3,730,439	3,765,331	3,780,387	3,798,531
3,733,359	3,765,845	3,780,783	3,798,957
3,734,426	3,766,245	3,780,827	3,799,049
3,735,024	3,766,332	3,780,958	3,799,497
3,736,351	3,766,427	3,781,452	3,800,017
3,736,829	3,766,534	3,781,527	3,800,262
3,737,417	3,766,553	3,781,610	3,800,277
3,738,003	3,766,567	3,781,627	3,800,794
3,738,652	3,766,981	3,781,792	3,800,916
3,738,814	3,767,418	3,781,872	3,800,992
3,739,082	3,767,633	3,783,005	3,801,205
3,739,829	3,768,024	3,783,027	3,802,286
3,740,893	3,768,490	3,783,165	3,802,604
3,740,909	3,768,611	3,783,210	3,805,235
3,741,139	3,768,903	3,783,239	3,805,470
3,741,295	3,769,033	3,783,469	3,806,073
3,741,495	3,769,076	3,783,501	
3,741,533	3,769,208	3,784,354	

Patents Available for Licensing or Sale

D.228,559. DOLL. Joyce Cervantes, Box 21, Compass Lake, Fla., 32448.

D.230,783. BELT. Jean Walton Lang, Swanton, Vt., 05488.

2,970,783. COMPOSITE WEARING PARTS FOR CRUSHERS AND THE LIKE. A. H. Plyer, 55 E. Monroe, Chicago, Ill., 60603.

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,238,289. MULTIPLE INFORMATION CONDUIT APPARATUS. Dale C. Rowe, 23 S. Bereman St., Aurora, Ill., 60538.

3,352,158. PRESSURE GAUGE FOR PUMPS. Clarence Goebel, Rte. 1, Haskell, Tex., 79521.

3,578,840. REVOLVING REFLECTOR. John O. Richards, 980 Mill Circle, Apt. No. 99, Alliance, Ohio, 44601.

3,602,389. CONTAINER OPENER AND HANDLE ASSEMBLY. David E. Russell, 110 Riverside Ave., Jacksonville, Fla., 32202.

3,631,388. ENGINE OIL AND WATER TEMPERATURE AUDIO WARNING SYSTEM. Raymond K. Strong, 11711 S.W. 170th St., Miami, Fla., 33157.

3,709,671. METHOD FOR PROCESSING SLAG. Fritz Forschepiepe, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2–5 Kasumigaseki, 3–chome, Chiyoda-ku, Tokyo 100, Japan.

3,752,524. GRIPPING DEVICE. Otto Reick, Jr. 119 Phelps St., Decatur, Mich., 49045.

3,764,059. STUD LOCK. Stewart R. Knowles. 214 Orchard St., Strasburg, Va. 22657.

3,765,860. ARRANGEMENT FOR PROCESSING SLAG. Fritz Forschepiepe, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y. 10017.

3,777,418. LUNCH BOX. Leah H. Cooper, 1653 Sheepshead Bay Road, Brooklyn, N.Y. 11235.

3,788,170. MECHANISM FOR RADIAL ADJUSTMENT OF TOOLS IN ROTARY TUBULAR TOL HOLDERS OF SHAVING MACHINES OR THE LIKE. Th. Kieserling & Albrecht, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y. 10017.

3,791,734. MICROFILM CAMERA AND LIGHT SOURCE THEREFOR. George F. Dvorak, 53 W. Jackson Blvd., Chicago, Ill. 60604.

3,795,254. SALT REMOVAL SPRAY DEVICE. Nelson K. Blosser, General Delivery P.O. Box 327, Gergholz, Ohio. 43908.

3,781,408. AIR POLLUTION CONTROL. Ping-Wha Lin, 506 S. Darling, Angola, Ind. 46703.

3,782,009. BEHAVIOR MODIFICATION POINT BOARD. Eula K. Darnell, 307 Baldwin, West Helena, Ark., 72390.

3,771,811. CHILD'S COASTER. A. C. De Campos Bueno, Sao Paulo, Brazil. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,786,832. SOLAR EVAPORATION CONTROLLED SYSTEM. Dale Marean, 1626 First St., Manhattan Beach, Calif., 90266.

3,796,453. DOGGIE MAID. Lillian P. Grimes, 264 S. Main Road, Vineland, N.J. 08360.

3,796,458. BOWL SHAPED AUTOMOBILE. Katherine A. Minini, 445 S. 3rd St., #11, San Jose, Calif., 95112.

3,800,726. TELESCOPIC TRAILERABLE HOUSEBOAT. Reuel A. Murphy, Rte. A, Box 137, Space 7, Westland Mobile Park, Lower Lake, Calif., 95457.

3,802,102. MOVIE TITLEING AND SPECIAL EFFECTS EQUIPMENT. Robert P. Licciardi, 1149 Ridge Road E., Rochester, N.Y., 14621.

3,803,743. MINNOW DIPPER. Walter Nalepka, 33648 Michelo St., Livonia, Mich., 48150.

3,805,390. TARGET MAKER. Henry A. Craig, 4310 South Elm, Rapid City, S. Dak., 57701.

3,807,592. CAR TRUNK LOADER. Dwane Simmons, 7465 Olive Tree Lane, Highland, Calif., 92346.

3,808,692. TAPE MEASURE COUNTER. Morton Gartner, 60 E. 8th St., New York, N.Y., 10003.

3,811,461. DUAL ACTION TRIGGERING VALVE DEVICE FOR INFLATABLE EQUIPMENT. Joseph F. Novak, 609 State St., Calumet City, Ill., 60409.

3,820,182. SWIMMING POOL CLEANER. William J. Vockroth, 1149 Pleasant Road, Harrisburg, Pa., 17111.

Eastman Kodak Company announces that nonexclusive licenses are available to responsible applicants under the following 11 patents.

Applications for licenses may be addressed to the Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,431,111. CYANINE DYES.

3,520,588. AUTOSTEREO PICTURE.

3,617,282. NUCLEATING AGENTS FOR PHOTOGRAPHIC REVERSAL PROCESSES.

3,632,808. CYANINE DYES CONTAINING AN IMIDAZO [4,5-b]QUINOXALINE NUCLEUS.

3,642,223. SPOOL.

3,658,525. REVERSAL COLOR PHOTOGRAPHIC PROCESSES.

3,695,878. METHOD OF PRODUCING AUTOSTEREO PICTURES.

3,732,058. APPARATUS FOR IGNITING PERCUSSIVELY OR ELECTRICALLY FIREABLE FLASH UNITS.

3,758,300. COLOR SOUND MOTION PICTURE FILM PRINTS WITH MINIMAL FOGGED GRAIN RELATED NOISE IN SOUND TRACK.

3,770,437. PHOTOGRAPHIC BLEACH COMPOSITIONS.

3,810,214. FLASH EXTENDER.

RCA Corporation offers to grant nonexclusive licenses on on reasonable terms and conditions under the following 56 patents.

Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,800,378. METHOD OF MAKING A DIRECTLY-HEATED CATHODE.

3,801,033. APPARATUS FOR EASILY ENGAGING, DISENGAGING AND LOCKING LOAD TO ROTATABLE DRIVING ELEMENT.

3,801,378. NIOBIUM-GALLIUM SUPERCONDUCTOR.

3,801,477. METHOD OF DEPOSITING ELECTRODE LEADS.

3,801,856. INSTANT-ON CIRCUIT FOR A TELEVISION RECEIVER.

3,801,857. TELEVISION DEFLECTOR CIRCUIT WITH TRANSFORMERLESS COUPLING BETWEEN THE DRIVER AND OUTPUT STAGE.

3,801,892. HEATER-CATHODE INSULATION LEAKAGE TEST METHOD AND APPARATUS.

3,801,949. THERMAL DETECTOR AND METHOD OF MAKING THE SAME.

3,802,967. 111-V COMPOUND ON INSULATING SUBSTRATE AND ITS PREPARATION AND USE.

3,803,436. SHADOW MASK MOUNTING ASSEMBLIES.

3,803,438. ELECTROLUMINESCENT FILM AND METHOD FOR PREPARING SAME.

3,803,510. ELECTRON-BEAM PUMPED LASER WITH EXTENDED LIFE.

3,803,602. DIGITAL RANGE RATE COMPUTER.

3,803,604. DIGITAL TRACKER.

3,803,605. TRACK GATE MOVEMENT LIMITER.

3,804,766. LOW BIREFRINGENT ORTHOFERRITES.

3,804,981. BRIGHTNESS CONTROL.

3,805,117. HYBRID ELECTRON DEVICE CONTAINING SEMICONDUCTOR CHIPS.

3,805,125. SEMICONDUCTOR MEMORY ELEMENT.

3,805,184. GATED ASTABLE MULTIVIBRATOR.

3,805,195. ADAPTIVE SURFACE WAVE DEVICES.

3,806,372. METHOD FOR MAKING A NEGATIVE EFFECTIVE ELECTRON-AFFINITY SILICON ELECTRON EMITTER.

3,806,668. INFORMATION PLAYBACK SYSTEM.

3,806,883. LEAST RECENTLY USED LOCATION INDICATOR.

3,807,006. METHOD OF INSTALLING A MOUNT ASSEMBLY IN A MULTIBEAM CATHODE-RAY TUBE.

3,807,039. METHOD FOR MAKING A RADIO FREQUENCY TRANSISTOR STRUCTURE.

3,807,127. METHOD OF CLOSING A LIQUID CRYSTAL DEVICE.

3,807,657. DUAL THRUST LEVEL MONOPROPELLANT SPACECRAFT PROPULSION SYSTEM.

3,808,043. METHOD OF FABRICATING A DARK HEATER.

3,808,065. METHOD OF POLISHING SAPPHIRE AND SPINEL.

3,808,466. CAPACITIVE-DISCHARGE TIMING CIRCUIT USING COMPARATOR TRANSISTOR BASE CURRENT TO DETERMINE DISCHARGE RATE.

3,808,570. STATIC CONVERGENCE DEVICE FOR ELECTRON BEAMS.

3,808,769. LIQUID CRYSTAL DEVICE CLOSURE METHOD.

3,809,458. LIQUID CRYSTAL DISPLAY.

3,809,574. ALUMINUM OXIDE FILMS FOR ELECTRONIC DEVICES.

3,809,926. WINDOW DETERTOR CIRCUIT.

3,809,974. CORONA DISCHARGE DEVICE.

3,810,023. AUTOMATIC SQUELCH TAIL ELIMINATOR FOR TONE CODED SQUELCH SYSTEMS.

3,811,055. CHARGE TRANSFER FAN-IN CIRCUITRY.

3,811,754. CORRECTING LENS.

3,811,855. METHOD OF TREATING A GLASS BODY TO PROVIDE AN ION-DEPLETED REGION THEREIN.

3,811,926. METHOD FOR COATING ONLY THE CONVEX MAJOR SURFACE OF AN APERTURED MASK FOR A CATHODE-RAY TUBE.

3,811,963. METHOD OF EPITAXIALLY DEPOSITING GALLIUM NITRIDE FROM THE LIQUID PHASE.

3,812,289. TELEVISION RECEIVER USING SYNCHRONOUS VIDEO DETECTION.

3,812,383. HIGH SPEED SIGNAL FOLLOWING CIRCUIT.

3,812,384. SET-RESET FLIP-FLOP.

3,812,397. INDEPENDENT ELECTRON GUN BIAS CONTROL.

3,812,437. IMPEDANCE CONTROL USING TRANSFERRED ELECTRON DEVICES.

3,812,528. TWO COLOR MEDIUM FOR FULL COLOR TV FILM SYSTEM.

3,812,537. TAPE CARTRIDGE PLAYER CARTRIDGE MAGAZINE.

3,813,488. VIDEO STRIPPER.

3,813,576. SERIES REGULATED POWER SUPPLY FOR ARC DISCHARGE LAMPS UTILIZING INCANDESCENT LAMPS.

3,813,580. HIGH VOLTAGE PROTECTION CIRCUIT.

3,813,595. CURRENT SOURCE.

3,813,596. MAGNETIC REED SENSOR SUITABLE FOR USE IN IGNITION TIMING SYSTEMS.

3,813,678. HINGED DRUM SYSTEM.

General Electric Company prepares to grant non-exclusive licenses under the following 37 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following patent should be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,800,631. FE AL CR Y CO ALLOY.

Applications for licenses under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Division, General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,806,626. MEANS FOR REDUCING AUDIBLE NOISE DEVELOPED BY AN EXTRA HIGH VOLTAGE TRANSMISSION LINE.

Applications for licenses under the following 3 patents may be addressed to: General Electric Co., Division Patent Counsel, Housewares Business Div., 1285 Boston Ave., Bridgeport, Conn., 06602.

3,606,691. STEAM-POWERED SPRAY IRON.

3,654,715. ADJUSTABLE SPRAYER IRON WITH TEMPERATURE INTERLOCK.

3,465,423. PROCESS OF MAKING ALUMINUM BONDED STAINLESS STEEL ARTICLE.

Application for licenses under the following patents may be addressed to: General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804, Attention: Patent Counsel.

3,182,282. ELECTRICAL CONNECTION.

3,482,127. MOTOR VIBRATION ISOLATION MOUNTING.

3,495,101. THERMAL MOTOR.

3,552,115. INTERVAL TIMER FOR PROVIDING A FIXED AND LOCKED TIMED CYCLE.

3,633,057. STATOR HAVING IMPROVED WINDING DISTRIBUTION.

Applications for licenses under the following 6 patents may be addressed to: Patent Counsel, STG PRODS Division, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12305.

3,760,869. METHOD OF THERMAL EXHAUST AND SYSTEM THEREFOR.

3,800,861. AIR COOLED VAPOR CONDENSER MODULE.
3,803,001. COMBINATION CONDENSER-DEGASSER-DEAERATOR FOR A DESALINATION PLANT.

3,805,217. CONNECTION BAR COUPLING.

3,807,218. SAMPLING DEVICE FOR DYNAMOELECTRIC DEVICE.

3,812,377. SYSTEM FOR INDEPENDENT OR COMMON CONTROL OF PRIME MOVERS.

Applications for licenses under the following 11 patents may be addressed to: General Electric Company, Transportation Systems Business Division, 2901 E. Lake Road, Erie, Pa., 16501. Attention: Patent Counsel.

3,529,698. SELF-OPERATING LUBRICATION SYSTEM FOR GEAR DRIVE UNITS.

3,621,370. GENERATOR LOAD CONTROL SYSTEM.

3,679,894. ACCELERATION CONTROL SYSTEM FOR VEHICLES.

3,713,709. RESILIENT AXLE LINING DUST GUARD.

3,731,121. COMMUTATOR AIR-DEFLECTOR.

3,740,600. SELF-SUPPORTING COIL BRACE.

3,756,665. CONTROL APPARATUS FOR APPLICATION OF AUTOMATIC AIR BRAKE SYSTEMS.

3,791,203. METHOD FOR MEASURING TORSIONAL VIBRATION.

3,759,540. VEHICLE CHASSIS.

3,771,821. ELECTRONIC POWER CONTROL AND LOAD RATE CIRCUIT.

3,791,657. DYNAMIC LIP SEAL.

Applications for licenses under the following 10 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,292,884. HERMETIC COMPRESSOR MOUNTING SYSTEM.

3,628,845. REFRIGERATOR CABINET WITH SELF-CLOSING DOOR.

3,635,043. HOUSEHOLD REFRIGERATOR INCLUDING AUTOMATIC ICEMAKER AND DOOR MOUNTED ICE STORAGE RECEPTACLE.

3,793,942. SPRAY ACTUATOR FOR REFUSE COMPACTOR.

3,794,396. REFRIGERATOR CABINET CONSTRUCTION.

3,794,400. RACK MECHANISM FOR TOPLOADING DISHWASHER.

3,794,571. REGENERATION OF FERRIC CHLORIDE COPPER ETCHING SOLUTIONS.

3,796,064. SUCTION ACCUMULATOR.

3,797,764. SELF-LATCHING WASTE FOOD DISPOSER MOUNTING ASSEMBLY.

3,798,465. CONTROL ARRANGEMENT FOR A WASHING MACHINE.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent-application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent application 271,944. Communications System Having Single RF Channel Diversity Means. Filed July 14, 1972, PC $4/MF $1.45.

Patent application 271,945. Digital Bit Synchronizer. Filed July 14, 1972, PC $4/MF $1.45.

Patent application 274,030. Mechanical Rotary Tilt Stage. Filed July 21, 1972, PC $4/MF $1.45.

Patent application 275,018. Method and Means for Passivation and Isolation in Semiconductor Devices. Filed July 25, 1972, PC $4/MF $1.45.

Patent application 275,022. Portable Hand Held Dosimeter. Filed July 25, 1972, PC $4/MF $1.45.

Patent application 288,816. Ramjet With Integrated Rocket Boost Motor. Filed Sept. 13, 1972, PC $4/MF $1.45.

Patent application 298,209. Portable Repair Apparatus. Filed Oct. 17, 1972, PC $4/MF $1.45.

Patent application 300,934. Direction Finding Interferometer For a Linear FM Signal. Filed Oct. 26, 1972, PC $4/MF $1.45.

Patent application 304,582. Columbium-Base Alloy. Filed Nov. 7, 1972, PC $4/MF $1.45.

Patent application 310,036. Flys-Eye Mirror Laser Apparatus. Filed Nov. 28, 1972, PC $4/MF $1.45.

Patent application 317,554. Air-to-Air Fire Control Disturbed Line Method and System. Filed Dec. 22, 1972. PC $4/MF $1.45.

Patent application 320,796. A Compatible Scanning System. Filed Jan. 3, 1973, PC $4/MF $1.45.

Patent application 322,571. Tow Plate. Filed Jan. 10, 1973. PC $4/MF $1.45.

Patent application 326,207. Laser Window Materials. Filed Jan. 24, 1973. PC $4/MF $1.45.

Patent application 327,360. Burst Phase Shift Keyed Receiver. Filed Jan. 29, 1973, PC $4/MF $1.45.

Patent application 328,157. Truncated Modified Sequential Hypothesis Test Target Detector. Filed Jan. 31, 1973, PC $4/MF $1.45.

Patent application 334,793. Method of Connecting Substantial Similar Metal Parts. Filed Feb. 22, 1973, PC $4/MF $1.45.

Patent application 336,583. Thermal Stabilization of Polyamide Fibers. Filed Feb. 28, 1973. PC $4/MF $1.45.

Patent application 340,516. Atomic Resonance Optical Filter-Detector. Filed Mar. 12, 1973, PC $4/MF $1.45.

Patent application 349,902. Cargo Handling Trailer. Filed Apr. 9, 1973, PC $4/MF $1.45.

Patent application 349,903. Boost-Surge Power Supply. Filed Apr. 9, 1973, PC $4/MF $1.45.

Patent application 350,257. Temperature Compensated Latching Ferrite Phase Shifter. Filed Apr. 11, 1973, PC $4/MF $1.45.

Patent application 350,258. Ultra Broad Band RF Phase Shifter. Filed Apr. 11, 1973, PC $4/MF $1.45.

Patent application 350,259. Atmospheric Sampling Probe for a Mass Spectrometer. Filed Apr. 11, 1973, PC $4/MF $1.45.

Patent application 350,855. Compton Back-Scattered Radiation Source. Filed Apr. 13, 1973, PC $4/MF $1.45.

Patent application 351,670. Four-Horn Radiometric Tracking RF System. Filed Apr. 16, 1973, PC $4/MF $1.45.

Patent application 352,385. High Modulus Graphite Fiber Reinforced Tubes. Filed Apr. 18, 1973, PC $4/MF $1.45.

Patent application 352,389. Treatment of Aluminum Alloys. Filed Apr. 18, 1973, PC $4/MF $1.45.

Patent application 366,390. Cassette-Type Tube Welder. Filed June 8, 1973. PC $4/MF $1.45.

Patent application 369,385. Self Normalizing Spectrum Analyzer and Signal Detector. Filed June 12, 1973. PC $4/MF $1.45.

Patent application 379,026. High Resolution, Very Short Pulse, Ionosounder. Filed Aug. 13, 1973, PC $4/MF $1.45.

Patent application 379,028. Anti-Frost Apparatus. Filed July 13, 1973, PC $4/MF $1.45.

Patent application 381,443. Electrolytic Igniter. Filed June 19, 1973, PC $4/MF $1.45.

Patent application 386,924. Dielectric Directional Antenna. Filed Aug. 9, 1973, PC $4/MF $1.45.

Patent application 386,925. Preparation of Lead Lanthanum Zirconate Titanate Bodies. Filed Aug. 9, 1973, PC $4/MF $1.45.

Patent application 392,380. Aft Inlet Ramjet Powered Missile. Filed Aug. 28, 1973, PC $4/MF $1.45.

Patent application 407,378. Method for Converting Chrysotile Asbestos. Filed Oct. 17, 1973, PC $4/MF $1.45.

Patent application 407,380. Surface Treatment of Titanium and Titanium Alloys. Filed Oct. 17, 1973, PC $4/MF $1.45.

DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW., Washington, D.C. 20590

Patent application 472,166. Visual Divided Attention Alcohol Safety Interlock System. Filed May 22, 1974, PC $4/MF $1.45.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch Westwood Building, Bethesda, Md. 20014

Patent application 423,303. Human Parathyroid Hormone. Filed Dec. 10, 1973. PC $4.50/MF $1.45.

Patent application 441,445. Cell Culture on Semi-Permeable Tubular Membranes. Filed Feb. 11, 1974, PC $4.25/MF $1.45.

Patent application 444,920. Process for the Preparation of Dehydroberdinium Salts. Filed Feb. 22, 1974, PC $4/MF $1.45.

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Patent 3,654,477. Obstacle Detection System for Use by Blind Comprising Plural Ranging Channels Mounted on Spectacle Frames. Filed June 2, 1970. Patented Apr. 4, 1972. Not available NTIS.

Patent 3,790,552. Method of Removing Hepatitis-Associated Antigen From a Protein Fraction Using Polyethylene Glycol. Filed Mar. 16, 1972. Patented Feb. 5, 1974, Not available NTIS.

Patent 3,790,663. Preparation of Dry Antiserum Coated Solid-Phase for Radioimmunoassay of Antigens. Filed July 7, 1970. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,791,374. Programmer for Segmented Balloon Pump. Filed Aug. 9, 1971. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,799,159. Hydraulic Flexion Control Device. Filed Oct. 28, 1971. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,799,844. Instrumental Method for Plating and Counting Aerobic Bacteria. Filed June 2, 1971. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,807,401. Anticoagulating Blood Suction Device. Filed June 21, 1972. Patented Apr. 30, 1974. Not available NTIS.

Patent 3,807,563. Individual Household Aerated Waste Treatment System. Filed July 27, 1971. Patented Apr. 30, 1974. Not available NTIS.

DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., N.W.
Washington, D.C. 20240

Patent application 412,222. Method for the Preparation of Highly Pure Titanium Tetrachloride From Calcium-Containing Titanium Materials. Filed Nov. 2, 1973. PC $4/MF $1.45.

Patent application 422,802. MHD Generator With Uniform Current Distribution. Filed Feb. 15, 1974. PC $4/MF $1.45.

Patent application 438,906. Method of Desorbing Gold From Activated Carbon. Filed Feb. 1, 1974. PC $4/MF $1.45.

Patent application 442,800. MHD Generator with Uniform Voltage Distribution. Filed Feb. 15, 1974. PC $4/MF $1.45.

Patent application 456,509. Long Shield Mining Method. Filed Apr. 1, 1974. PC $4/MF $1.45.

Patent application 457,667. Ultrahigh Vacuum Mounting Fixture. Filed Apr. 3, 1974. PC $4/MF $1.45.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA
Code GP–2, Washington, D.C. 20546

Patent 3,797,098. Totally Confined Explosive Welding. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,797,919. High Speed Shutter. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,741. Method of Fabricating an Object With a Thin Wall Having a Precisely Shaped Slit. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,798,748. Diffusion Welding. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,798,778. Orbital and Entry Tracking Accessory for Globes. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,798,896. Optically Actuated Two Position Mechanical Mover. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,082. Auditory Display for the Blind. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,253. Digital Controller for a Baum Folding Machine. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,801,617. Thiophenyl Ether Disiloxanes and Trisiloxanes Useful as Lubricant Fluids. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,802,249. Method and Apparatus for Checking Fire Detectors. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,802,253. Ultrasonic Biomedical Measuring and Recording Apparatus. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,802,262. Electromagnetic Flow Rate Meter. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,802,660. Flow Control Valve. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,802,753. Hollow Rolling Element Bearings. Patented Apr. 9, 1973. Not available NTIS.

Patent 3,803,090. Ultraviolet and Thermally Stable Polymer Compositions. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,803,617. High Efficiency Multifrequency Feed. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,804,506. Rotary Solenoid Shutter Drive Assembly and Rotary Inertia Damper and Stop Plate Assembly. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,804,525. Long Range Laser Traversing System. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,804,703. Glass-to-Metal Seals Comprising Relatively High Expansion Metals. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,805,622. Depolyable Pressurized Cell Structure for a Micrometeoroid Detector. Patented Apr. 28, 1974. Not available NTIS.

Patent 3,806,802. Automatic Quadrature Control and Measuring System. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,806,831. Ultra-Stable Oscillator with Complementary Transistors. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,806,835. Rapidly Pulsed, High Intensity, Incoherent Light Source. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,806,932. Amplitude Steered Array. Patented Apr. 23, 1974. Not available NTIS.

[FR Doc. 74–16304; Filed 7–16–74; 8:45 am]

Disclaimers

Design No. 231,871.—*Jeannette L. Webb*, Madison, N.J. FRAME FOR MAKING FRINGE. Patent dated June 25, 1974. Disclaimer filed July 1, 1974, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to June 11, 1988.

3,731,208.—*Richard G. Laatt*, Longmount, and *Juan A. Rodriguez*, Boulder, Colo. APPARATUS FOR AND METHOD OF INTEGRATION DETECTION. Patent dated May 1, 1973. Disclaimer filed June 28, 1974, by the assignee, *Storage Technology Corporation*.

Hereby enters this disclaimer to claims 1–4 and 8 of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 20, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-7-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Aco; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-1-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-16-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-4-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-3-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-29-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-1-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-1-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-11-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-10-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-29-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-23-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-2-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-24-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	11-1-73

Expiration of patents: The patents within the range of numbers indicated below expire during August 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,801,414 to 2,804,619, inclusive
Plant Patents..... Numbers 1,626 to 1,637, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 6, 1974

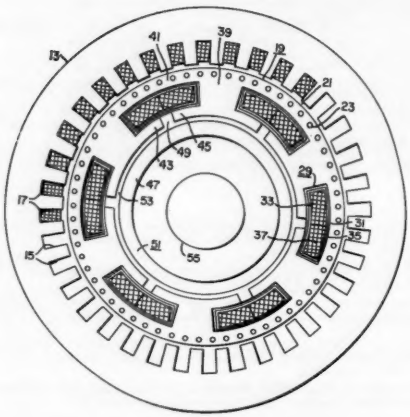
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T925,001
DYNAMOELECTRIC MACHINE WITH A SUPERCONDUCTIVE FIELD WINDING FOR OPERATION IN EITHER A SYNCHRONOUS OR AN ASYNCHRONOUS MODE

Cecil J. Mole, Monroeville, and Henry E. Haller III, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 29, 1973, Ser. No. 327,520
Int. Cl. H02k 9/00
U.S. Cl. 310—52
1 Sheet Drawing. 16 Pages Specification



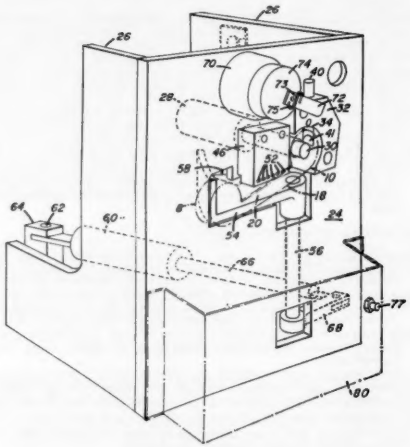
Two parallel magnetic flux paths are provided in a dynamoelectric machine having a superconductive field winding. A first, or main, magnetic flux path includes at least one area of nonferromagnetic or diamagnetic material. A second, or shunt, magnetic flux path prevents the relatively low frequency AC flux present during starting or asynchronous operation of the machine, when used as an AC motor, from penetrating the superconductive winding.

T925,002
FILM CARTRIDGE OPENING DEVICE

Robert S. Rosborough and Harold C. Pierce, both of 1669 Lake Ave., Rochester, N.Y. 14650

Filed Apr. 2, 1973, Ser. No. 347,271
Int. Cl. B26f 3/00
U.S. Cl. 225—103
2 Sheets Drawing. 16 Pages Specification

A film cartridge opening device for film cartridges of the type having a supply chamber, a take-up chamber, and a box-like exposure platform rigidly interconnecting the chambers. The take-up chamber of a cartridge is mounted on a spindle, and the cartridge rotated on the spindle until the exposure platform is moved onto a fixed detector head. The detector head has fluidic ports for sensing notches in the exposure platform indicating the type of film contained in the cartridge. The detecting system is preset to sense a predetermined type of cartridge and film, and if such cartridge is sensed, the cartridge breaking mechanism will operate, when actuated, to break the cartridge and permit removal of the film therefrom. If a cartridge containing a different type of film is sensed by the detecting system, the cartridge breaking mechanism



will not operate, if actuated, and a signal device will be actuated. The breaking of the cartridge is achieved by a breaking ram which engages and urges the supply chamber of the cartridge in a direction substantially parallel to the spindle axis for breaking the supply chamber, most of the exposure platform, and the take-up chamber cap away from the take-up chamber and film spool, which remains on the spindle. Accordingly, substantially the entire lower and outer sides of the take-up chamber are open for the withdrawal of film from the spool.

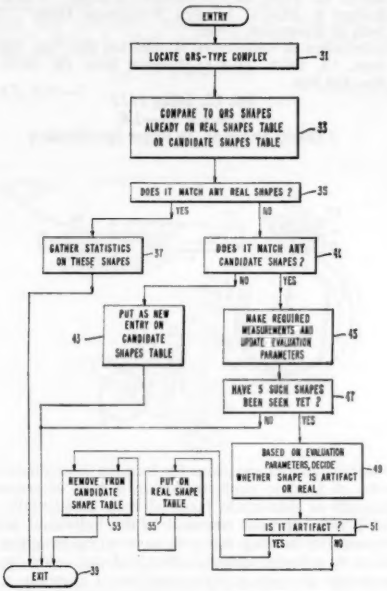
T925,003
ECG MONITORING METHOD

Raymond E. Bonner, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 51,236, July 30, 1970. This application June 29, 1973, Ser. No. 375,284
Int. Cl. A61b 5/04
U.S. Cl. 444—1
6 Sheets Drawing. 32 Pages Specification

Methods of monitoring and analyzing electrocardiographic signal data, to identify arrhythmias and the like,

require selection of real QRS complexes and rejection of artifacts that look like real QRS complexes. To achieve this end, two tables of QRS complex shapes are employed in a digital computer, with the first table containing the shapes of different versions of real QRS complexes and the second table containing the shapes of QRS-type complexes which have not yet been determined real but are candidates for being considered real. As shown in FIG. 3, a located QRS-type complex is first compared to the various shapes on the "real shapes" table, as represented by the steps of blocks **33** and **35**. If it compares with none, it is then compared to the shapes on the "candidate



shapes" table, as represented by the steps of blocks **33–41**. If it compares with none of the shapes on the "candidate shapes" table, it is added thereto as a new candidate, as shown at step **43**. If it compares with one of the shapes on the "candidate shapes" table, that fact is noted at step **45** and more credence is given that shape as being a possible new version of a real QRS complex. Measurements are also made at step **45** for evaluating candidate shapes and decision logic is employed at step **49** to ultimately decide whether or not a candidate shape, after having been seen several times, is a new version of a real QRS complex.

T925,004
FLEXIBLE POLYURETHANE FOAM

John E. Besser, 4422 Harbor Drive; and Arthur P. Werts III, 1362 Lafayette Circle, both of Kingsport, Tenn. 37664; and James C. Martin, 601 N. Mountain View Circle, Johnson City, Tenn. 37601

Continuation of abandoned application Ser. No. 275,124, July 26, 1972. This application Aug 21, 1973, Ser. No. 390,291

Int. Cl. C08g *22/46*
U.S. Cl. 260—2.5 AC
No Drawing. 13 Pages Specification

The present invention provides a composition which is especially applicable to the one-shot process of making polyurethane foam. It has been discovered that this composition is particularly effective in catalyzing the reaction between the polyol and the diisocyanate and in crosslinking the polymer in a unique manner to provide an unexpected increase in physical properties such as tensile strength, tear resistance and compression set, as well as provide a desirable rise time. According to the present invention, the composition includes an N,N'-dialkyltoluenediamine and a tertiary amine. Conventional catalysts for polyurethane include various tertiary amines, but tertiary amines do not crosslink the polymer. Certain toluenediamines have also been used in the past as combination crosslinkers and catalysts, but the reaction rates are slower than when using typical commercial catalysts which do not crosslink the foam. It is believed that these toluenediamines are consumed in crosslinking the polymer before the complete use of it as a catalyst has been completed, thereby slowing the reaction time.

T925,005
COPOLYESTER HOT MELT ADHESIVE TEXTILE FIBERS

Shen S. Chen, 840 Teasel Drive, C7–1 37660, and Fred F. Chen, 3919 Bond St., 37664, both of Kingsport, Tenn.

Filed Oct. 1, 1973, Ser. No. 402,246
Int. Cl. C08g *17/06;* **A41b** *27/00*
U.S. Cl. 260—75 R
No Drawing. 9 Pages Specification

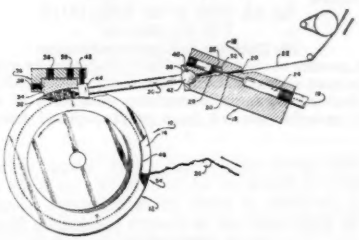
This invention relates to textile fibers of a composition comprising a copolyester of terephthalic acid, adipic acid, ethylene glycol, and 1,4-butanediol. These fibers can be processed into threads, fabrics or webs for use in hemming, seaming or interlining fabrics.

T925,006
FLUID JET INJECTOR DEVICE FOR A YARN BULKING APPARATUS

Robert B. Moore, Jr., 504 Woodmere Drive, Kingsport, Tenn. 37663

Continuation of abandoned application Ser. No. 289,929, Sept. 18, 1972. This application Nov. 5, 1973, Ser. No. 413,068

Int. Cl. D02g *1/20, 1/16, 1/12*
U.S. Cl. 28—1.3
1 Sheet Drawing. 7 Pages Specification

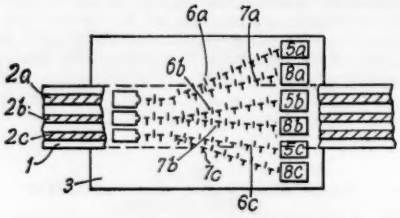


A fluid jet injector device for use with yarn bulking apparatus and other apparatus and adapted to separate the filaments of a yarn bundle and to increase drag tension on the yarn so as to assure constant self-feeding of the yarn from its source to and through the device; to raise the temperature of the yarn to a crimp receptive condition; and to convey the yarn to the bulking apparatus. The housing of the injector device has a passageway through which compressible fluid, preferably heated, and the yarn travel, an anvil against which the compressible fluid and yarn collide and rebound causing increased filament separation and hence increased drag tension, and an outlet into which the compressible fluid and yarn are rebounded from the anvil.

T925,007
BUBBLE MAGNETICS

Anthony Graham Marshall Last, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 12, 1973, Ser. No. 415,125
Claims priority, application Great Britain, Nov. 23, 1972, 54,196/72
Int. Cl. G11b *5/30*
U.S. Cl. 360—115
1 Sheet Drawing. 12 Pages Specification



A tape reading head consists of guide paths of discrete particles of low coercivity magnetic material on an ortho ferrite layer connecting bubble generators to collectors. The tracks may diverge to allow adequate space for the collectors for closely packed guide paths. The information on the tape is read by arranging that the intensity of the magnetic field of the bits of information on the tape is sufficient to cause a fresh bubble to be detached from a generator and/or a rotating magnetic field is applied so that each bit of stored information causes a bubble to be diverted from one track to another.

T925,008
POLYESTER-CELLULOSE ESTER POWDER COATING COMPOSITIONS

Robert C. Harrington, Jr., 2024 Canterbury Road, Kingsport, Tenn. 37660; James D. Hood, Rte. 2, Carroll Court, Blountville, Tenn. 37617; and Peter M. Grant, Rte. 12, Hemlock Park, Kingsport, Tenn. 37663

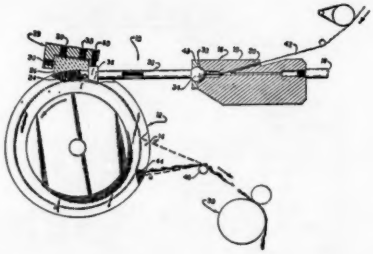
Continuation of abandoned application Ser. No. 296,711, Oct. 11, 1972. This application Jan. 9, 1974, Ser. No. 432,018
Int. Cl. C08b *21/08*; C08g *39/10*
U.S. Cl. 260—16
No Drawing. 6 Pages Specification

A powder coating composition which may be coated by techniques such as fluidized bed, electrostatic fluidized bed or electrostatic spray, comprising a mixture of a polyester material selected from poly(neopentyl terephthalate), certain alkylene copolymers of isophthalic and terephthalic acid, and aliphatic diacid modifications of these copolymers, blended with a wide weight percentage range of cellulose acetate butyrate or cellulose acetate propionate. Fused coatings of these materials have a reduced gloss and controllable texture.

T925,009
METHOD AND APPARATUS FOR FORMING THREE-DIMENSIONAL CRIMP IN YARN OF CONTINUOUS LENGTH FILMENTARY THERMOPLASTIC MATERIAL

Wendell G. Faw, 4515 Timberlake Lane 37664, and Robert B. Moore, Jr., 504 Woodmere Drive 37663, both of Kingsport, Tenn.

Continuation of abandoned application Ser. No. 288,827, Sept. 13, 1972. This application Feb. 12, 1974, Ser. No. 441,916
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6
3 Sheets Drawing. 18 Pages Specification



Method and an apparatus for forming three-dimensional crimp of random configuration in a yarn of continuous filaments of man-made material with substantially no S and Z twist or twist reversals in the individual crimped filaments by heating the yarn to a crimp receptive condition by a heated compressible fluid and using the fluid to convey the yarn at high speed into a crimping zone at an angle of about six (6) to twelve (12) degrees above the centerline of the crimping zone; forming a plug of yarn in the crimping zone with the upstream face of the plug being in substantially flat relationship at substantially right angles to the path of linear movement of the plug as it moves through and from the crimping zone; and cooling the yarn plug below the heated crimp receptive condition before removing the yarn from the plug.

REISSUES

AUGUST 6, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

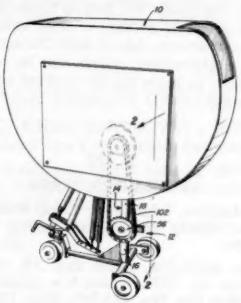
28,096
OSCILLATING MECHANISM FOR TENNIS BALL THROWING MACHINE

Fred A. Earle, Jr., 5001 E. Apache Trail, % 455 Merlin, Mesa, Ariz. 85205, and Carl S. Pound, deceased, late of Modesto, Calif., by Edith L. Pound, executrix, 2900 E. Hatch Road, Modesto, Calif. 95351

Original No. 3,568,653, dated Mar. 9, 1971, Ser. No. 757,671, Sept. 5, 1968. Application for reissue Mar. 9, 1973, Ser. No. 339,650

Int. Cl. F41b *3/04*

U.S. Cl. 124—1 **20 Claims**



A ball throwing machine having a two-section support including a fixed lower section and a movable upper section which carries the ball throwing mechanism. A motor-driven cam follower assembly is provided on the upper movable section and cooperates with a cam assembly on the fixed lower section so as to bias the rotatable upper section with respect to the fixed section and cause the ball throwing mechanism to move angularly. *The cam follower assembly is spring biased into engagement with the cam assembly. A limit stop is provided to limit the degree of return of the cam follower assembly.*

28,097
TIME DIVISION SWITCHING SYSTEM EMPLOYING COMMON TRANSMISSION HIGHWAYS

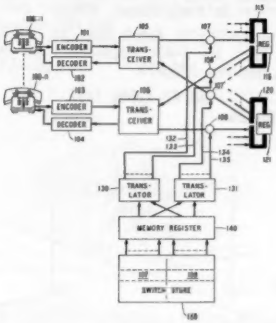
Walter Reinhold Nordquist, Naperville, and Wing Noon Toy, Glen Ellyn, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 3,617,643, dated Nov. 2, 1971, Ser. No. 844,945, July 25, 1969. Application for reissue June 11, 1973, Ser. No. 369,094

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AQ **6 Claims**

In a time division switching system, speech samples from a subscriber station are first encoded and then stored, in digital coded form in a register in a transceiver. The output of this register is gated to a second register in the common talking bus or highway during a first portion of a time slot; the sample from this register in the common highway is gated in a later portion of the same time slot to a similar transceiver connected to the called subscriber. It is then subsequently decoded and applied



to the called subscriber. Two-wire, four-wire, and conferencing arrangements are disclosed.

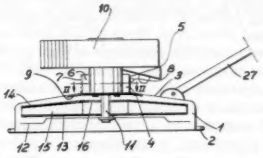
28,098
GRASS CUTTING MACHINES

Karl R. Dahlman, Malmo, Sweden, by Flymo Societe Anonyme, Malmo, Sweden, assignee

Original No. 3,110,996, dated Nov. 19, 1963, Ser. No. 178,883, Mar. 12, 1962. Application for reissue Feb. 22, 1973, Ser. No. 334,562

Int. Cl. A01d *73/00*

U.S. Cl. 56—12.8 **23 Claims**



A power mower with a rotary cutter blade rides by ground effect on a cushion of air by means of a radial air impeller rotated with the blade to bring air in at the top of a hood and expel it at the outer edges of the hood around the ends of the cutter blade.

28,099
9-OXO-5-HYDROXYDECANOIC ACID LACTONE

Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original No. 3,544,600, dated Dec. 1, 1970, Ser. No. 824,319, May 13, 1969. Application for reissue Nov. 1, 1973, Ser. No. 411,959

Int. Cl. C07d *7/06*

U.S. Cl. 260—343.5 **1 Claim**

The intermediates and processes of this disclosure provide a new stereo-specific total synthesis of steroidal

materials having known valuable pharmacological properties. A fundamental feature of this disclosure is the utilization of aryl ketals, preferably phenylenedioxy ketals derived from catechol as protective groups for oxo moieties in the polycyclic intermediates used in the aforesaid total synthesis.

28,100

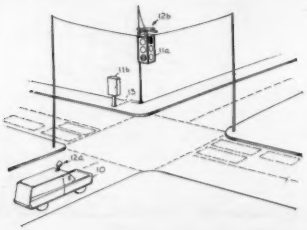
TRAFFIC SIGNAL REMOTE CONTROL SYSTEM

William H. Long, P.O. Box 33427, Woodbury, St. Paul, Minn. 55133

Original No. 3,550,078, dated Dec. 22, 1970, Ser. No. 623,765, Mar. 16, 1967. Application for reissue July 13, 1973, Ser. No. 379,070

Int. Cl. G08g *1/07*

U.S. Cl. 340—34 **16 Claims**



A system for remotely controlling traffic signals wherein a signal transmitted from an emergency vehicle causes a traffic light signal controller mounted at an intersection to operate in a remotely controlled mode to control a traffic light signaling operation in a selected phase of operation in response to the detected direction of approach of the emergency vehicle and the sensed phase of the traffic light at the time the approach of the emergency vehicle is detected. The detector preferably includes a light sensitive communications receiver which is capable of distinguishing a predetermined light communication signal having pulses of relatively sharp rise time and of a predetermined frequency, from steady state ambient light. This preferred receiver combines a photovoltaic detector having a fast response time in parallel with an inductance coil. The inductance value of the coil is chosen in relation to the photovoltaic detector capacitance to provide a resonant circuit response to a said predetermined light communication signal and, in the absence of a sharply varying light pulse, to cause the coil to act as a DC short circuit. *A transmitter for providing such a light communications signal preferably includes a chamber having a light-transmissive wall, an electronic flash lamp mounted in the chamber having electrical conductors adapted to be connected to be energized, and a light-transmissive electrically-insulating fluid in the chamber to contact the electrical conductors of the electronic flash lamp.*

28,101

AIR CUSHION VEHICLE

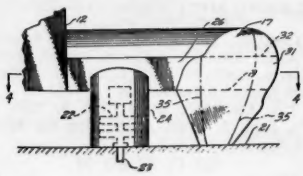
Gordon Dayton Knorr, Westlake Village, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Original No. 3,688,850, dated Sept. 5, 1972, Ser. No. 68,162, Aug. 31, 1970. Application for reissue Dec. 29, 1972, Ser. No. 319,515

Int. Cl. E21b *33/035*

U.S. Cl. 175—5 **15 Claims**

An air cushion vehicle in the form of a body having a flexible skirt therearound and means for pressurizing the region within the skirt is employed for transporting a well drilling rig or the like. A vertically extending slot is provided in the flexible skirt, comprising first and second flexible sheets on opposite sides of the slot in face to face abutment for sealing together. One side of each of the sheets is in fluid communication with the inside of the



skirt and the two sheets are free to move relative to each other over a principal portion of their extent for passing an object therebetween. An oil well Christmas tree or the like having a streamlined sheath can be passed through the slot in order to move the air cushion vehicle off of or onto a wellhead.

28,102

FILTRATION MASK

Delbert J. Mayhew, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 3,613,678, dated Oct. 19, 1971, Ser. No. 14,210, Feb. 24, 1970, which is a continuation-in-part of application Ser. No. 623,369, Mar. 15, 1967. Application for reissue June 21, 1973, Ser. No. 372,152

Int. Cl. A62b *23/06*

U.S. Cl. 128—146.2 **10 Claims**

A face mask having high and prolonged filtering efficiency specially adapted for surgical use formed from a filtering web composed entirely of synthetic organic fibers including filtering fibers 0.5 to 6 microns in diameter and a non-fuzzy face contacting layer formed from a porous smooth-surfaced thermoplastic film.

28,103

INVALID MOBILITY DEVICE

Arthur Schwartz, 14 Willelinor Drive, Edgewater, Md. 21037, and Frederick L. Day, Washington, D.C.; said Day assignor to said Schwartz

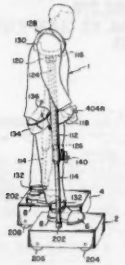
Original No. 3,463,146, dated Aug. 26, 1969, Ser. No. 610,627, Jan. 20, 1967. Application for reissue Oct. 6, 1972, Ser. No. 295,520

Int. Cl. A61h *1/02*

U.S. Cl. 128—25 R **19 Claims**

A device for raising and lowering a partially paralyzed person from a seated to a substantially standing position

and moving the person in a standing position along a substantially transverse direction. Motive means for raising



the person and additional motor means for moving the person in a plurality of directions along the surface.

28,104

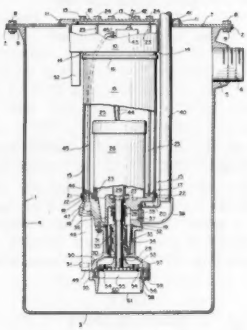
PUMP STORAGE GRINDER

Richard C. Grace, Carlisle, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Original No. 3,667,692, dated June 6, 1972, Ser. No. 26,925, Apr. 9, 1970. Application for reissue Mar. 7, 1973, Ser. No. 338,952

Int. Cl. B02c *13/18*

U.S. Cl. 241—36 **35 Claims**



The pump storage grinder employs a tank having a sewage inlet and a removable top cover supporting a depending sealed housing having a motor and motor controls for driving a grinder or comminutor and pump externally of the chamber by means of a common motor shaft. The chamber is formed by a control housing integral with the cover, a tube and pump head, all held together by means of tension bolts secured between the pump head and cover. The motor shaft extends through the pump head to drive a resilient helical pump and a comminutor impeller disc with depending blades that cooperate with a comminutor ring held between a comminutor inlet shroud and a pump housing secured to the pump head. A pump discharge chamber is provided in the head with a one-way valved passage leading to a discharge conduit extending through the cover. The level responsive motor control is provided with a liquid pressure sensing tube extending through the chamber in communication with a depending pipe secured to the pump head and housing.

28,105

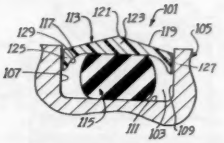
SEALING ASSEMBLY

Henry A. Traub, Palisades, Calif., assignor to W. S. Shamban & Co., Los Angeles, Calif.

Original No. 3,663,024, dated May 16, 1972, Ser. No. 51,950, July 2, 1970. Application for reissue Sept. 22, 1972, Ser. No. 291,198

Int. Cl. F16j *15/24*

U.S. Cl. 277—165 **9 Claims**



A sealing assembly including a slipper seal and an elastomeric seal with one of the seals circumscribing the other of the seals. The slipper seal includes first and second end portions separated by a central portion with the central portion having a circumferential surface adapted to slidingly and sealingly engage a member. The circumferential surface is generally flat in axial cross section and the first and second end portions taper radially away from such member so that they do not engage such member.

28,106

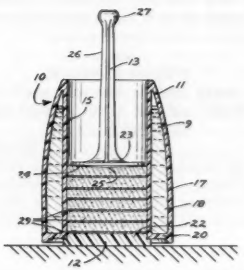
FOOD PATTY PRESS

Richard D. Lee, St. Paul, Minn., assignor to Le Mark Industries, Inc., St. Paul, Minn.

Original No. 3,609,799, dated Oct. 5, 1971, Ser. No. 820,978, May 1, 1969. Application for reissue June 7, 1973, Ser. No. 368,208

Int. Cl. A22c *7/00*

U.S. Cl. 17—32 **10 Claims**



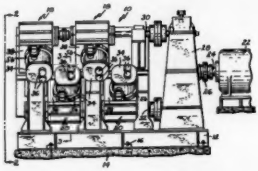
The body of a press for hamburger or the like is provided with a vertical cylindrical opening extending through it. A bottom closure plate completely closes the lower end of the cylindrical opening. Relatively thin nylon discs are dropped into the press alternately with measured portions of hamburgers to be pressed, and a nylon plunger is forced down upon the top of each meat portion as it is put into

the press to form a layer of meat patties separated by the nylon discs. A cover is provided to enclose the top of the cylindrical opening, either when the plunger is stored in the body or when meat patties are therein.

28,107
ROLLING MILL

Norman A. Wilson, Westboro, and Robert D. Wykes, Worcester, Mass., assignors to Morgan Construction Company, Worcester, Mass.

Original No. 3,336,781, dated Aug. 22, 1967, Ser. No. 391,491, Aug. 24, 1964. Application for reissue Oct. 26, 1973, Ser. No. 409,811
Int. Cl. B21b *13/12*
U.S. Cl. 72—235 **15 Claims**

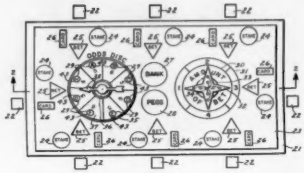


A rolling mill having a pass line defined by work rolls mounted in cantilever fashion on the ends of parallel pairs of roll shafts, with successive pairs of the roll shafts being disposed angularly to each other, and with each pair of roll shafts having roll parting adjustment means associated therewith for symmetrically adjusting the work rolls in relation to the pass line.

28,108
GAME OF CHANCE

Henry E. Lippert, 130 SW. 12th, Miami, Fla. 33130

Original No. 3,633,915, dated Jan. 11, 1972, Ser. No. 868,782, Oct. 23, 1969. Application for reissue Aug. 3, 1973, Ser. No. 385,259
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 H **1 Claim**



A table-type betting game that simulates gambling on races at a horse or dog track. The game includes an Amount of Bet circle, a number of Odds Discs, and a Bank. An indicator, rotated over the bet circle, determines the amount of a player's wager. The Bank is always the eventual winner, due to specially designed Odds Discs. Each disc is divided into segments of varying sizes, and each segment carries a betting odd, the reciprocal of each of the betting odds being greater than the corresponding segment's proportional share of the periphery of the disc. The discs are interchangeable, and each disc represents one game or "race." An arrow rotated over an odds disc determines the winning player and the odds he receives.

PLANT PATENTS

GRANTED AUGUST 6, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,581
NECTARINE TREE
Grant Merrill, 416 N. Anderson Road, Exeter, Calif. 93221
Filed Sept. 24, 1971, Ser. No. 183,717
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree as illustrated and described, most nearly resembling Scarlet Queen (U.S. Plant Pat. No. 3,064) but differing therefrom by leafing and blooming earlier so it has lower chilling requirements, ripening its fruit five days to a week earlier, and with a darker red skin color, and characterized by a vigorous, productive tree regularly bearing fruit which is very early ripening and having a light to dark red color covering from 50% to nearly 100% of its surface, a firm flesh for long distance shipment, and with leaves and blossoms that are very early with low chilling requirements so it may be grown in earlier areas of warmer winters.

3,582
PEACH TREE
Grant Merrill, 416 N. Anderson Road, Exeter, Calif. 93221
Filed Mar. 30, 1972, Ser. No. 239,829
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described and being particularly characterized by a moderately vigorous tree of medium size, bearing heavily and regularly a large and firm fruit that ripens very late and has a bright red blush and mottled and striped skin, a comparatively long stem which remains firmly attached to the fruit and twig and results in but little stem crease and natural drop as the fruit matures, and which most resembles and ripens about the same time as Merrill Halloween I (U.S. P.P. 1,473) but is an improvement thereon in being a smaller tree, more highly colored fruit and with a longer stem which remains firmly attached to the fruit and stem.

3,583
PEACH TREE
Grant Merrill, 416 N. Anderson Road, Exeter, Calif. 93221
Filed Mar. 30, 1972, Ser. No. 239,830
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach substantially as described and illustrated which is characterized by its firm flesh and uniform texture, a very bright yellow undercolor of its skin with a bright red blush over 50% to 100% of its surface on mature trees, and short pubescence on the skin, which most closely resembles O'Henry peach plant (P.P. 2,964), its parent, but is an improvement thereon in ripening about three weeks earlier.

3,584
ROSE PLANT
David L. Armstrong, Orange, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.
Filed Feb. 16, 1973, Ser. No. 333,137
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

A rose plant of the hybrid tea class grown as an outdoor seedling, primarily for garden decoration. The plant is bushy, upright-spreading, heavily branched, and with an abundance of medium size, semi-glossy foliage, the leaflets having irregularly serrated margins. From opening bud to final petal fall the blooms maintain a strong red color, with very little change in shade.

The flowers are usually borne singly, but may come as many as five on a steam, the blooms opening to from 3¾ to 5 inches, and being cupped to high-centered, with double pentalage and moderate sweetbriar fragrance.

3,585
ROSE PLANT
Theodore H. Johnson, Hadley, Mass., and William A. Warriner, Tustin, Calif., assignors to Jackson & Perkins Company, Medford, Oreg.
Filed Feb. 20, 1973, Ser. No. 333,747
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its excellent year around production of cut flowers, Venetian pink bud and open flower, vigorous plant with large, dark Parsley green foliage.

3,586
JUNIPER SHRUB
Clayton V. Berg, Box 845, Helena, Mont. 59601
Filed Mar. 22, 1973, Ser. No. 343,893
Int. Cl. A01h *7/00*
U.S. Cl. Plt.—50 **1 Claim**

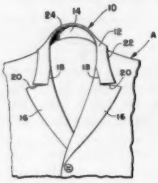
A new variety of juniper shrub believed to be a hybrid cross of *Juniperus scopulorum* and possibly *Juniperus horizontalis*, but in any event characterized by definite intense blue color in winter, and winter hardiness.

PATENTS

GRANTED AUGUST 6, 1974

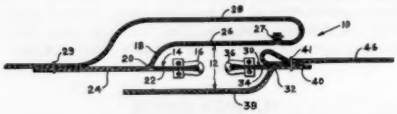
GENERAL AND MECHANICAL

3,827,084
UNDERCOLLAR CONSTRUCTION AND METHOD FOR MAKING SAME
Carlo N. Seta, 27457 Edgepark Dr., North Olmsted, Ohio 44070
Filed July 9, 1973, Ser. No. 377,546
Int. Cl. A41d *1/00*
U.S. Cl. 2—98 **9 Claims**



Undercollar for a garment is drafted in such a manner as to provide a built-in crease line giving the desired length on the outer edge of the collar without requiring a plurality of pressing operations to stretch and shrink the fabric.

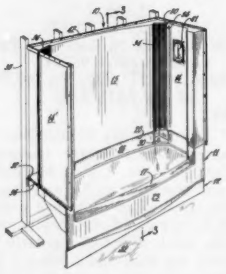
3,827,085
ZIPPER STRINGER FOR FLY SYSTEMS AND SYSTEM EMPLOYING SAME
Walter Thomas Ackermann, Watertown, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Apr. 6, 1972, Ser. No. 241,741
Int. Cl. A41d *1/06;* **A44b** *19/34*
U.S. Cl. 2—234 **4 Claims**



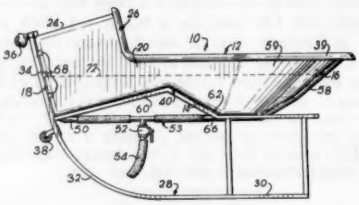
Trouser fly system includes a zipper chain, the stringers of which have a bifurcated tape, each having a primary web carrying a line of fastener elements, and secondary webs attached to the apparel panels or guarding the lines of fasteners.

3,827,086
BATHTUB AND WALL ENCLOSURE
Merrit W. Seymour, Sylvania, and Jeri O. Clark, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Jan. 26, 1972, Ser. No. 220,766
Int. Cl. A47k *3/08*
U.S. Cl. 4—175 **2 Claims**

A multi-piece glass fiber reinforced plastic bathtub and wall enclosure. The pieces being made to conform to manufacturing requirements of matched-metal die compression molding equipment. The pieces having special joint details so they interlock and overlap to form a rigid and watertight integral unit.



3,827,087
TILTABLE TUB ASSEMBLY FOR BATHING INVALIDS
William C. Cuthbertson, 108 W. Buffalo, Girard, Kans. 66743
Filed Mar. 12, 1973, Ser. No. 340,450
Int. Cl. A47k *3/06*
U.S. Cl. 4—178 **5 Claims**



A tub assembly for bathing invalids or the like is provided which is tiltable between a generally horizontal bathing position and a generally upright patient ingress and egress position. A reservoir compartment is presented at one end of the elongated tub in order that the same may be tilted from one position to the other without first draining the water therefrom when the tub is to be placed in an upright position. The normally bottom wall of the tub is contoured in a manner to support the invalid as well as to reduce the volume of water required to properly bathe the individual; the reservoir and the tub, when in its horizontal position, holding approximately the same volume of water. The tub end wall opposite the reservoir compartment supports the invalid in a semi-reclined or supine position and is provided with a spine-receiving channel therein in order that the back of the patient may be properly supported during bathing.

3,827,088

BATHTUB FILLER AND SHOWER APPLIANCE

Don C. Arnold, Palatine, and Richard L. Ritzenthaler, Crystal Lake, both of Ill., assignors to Cranda Corp., Alden, Ill.

Filed Oct. 24, 1972, Ser. No. 299,716
Int. Cl. E03c 1/042
U.S. Cl. 4—192 5 Claims

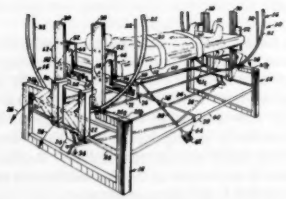
A bathtub filler and shower appliance adapted to be mounted vertically on a wall adjacent a bathtub, the appliance having a tub filler spout on the lower portion, a shower head on the upper portion and a faucet means and a diverter valve between the spout and shower head. The appliance also has concealed ducts for connection to hot and cold water lines, and concealed ducts within the appliance interconnecting the faucet means, the diverter valve, the spout and the shower head.

3,827,089

TURNOVER BED ASSEMBLY

William C. Grow, P.O. Box 2733, Texas City, Tex. 77590

Filed Sept. 16, 1971, Ser. No. 181,092
Int. Cl. A47c 3/32; A61g 7/10
U.S. Cl. 5—61 9 Claims



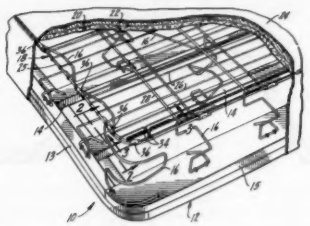
A turnover bed assembly, having two parallel but relatively movable mattresses movably supported on a rotationally movable carrier frame. An invalid who is lying on the lower mattress, and who wishes to change position from face-down to face-up to the other position, is strapped to that mattress; then the assembly is rotated a quarter-revolution, and his mattress is supported for movement towards the other mattress. Then a succeeding quarter-turn positions him in his desired position-changed position on the other mattress.

3,827,090

WIRE MESH PAD FOR MATTRESS BOX SPRINGS

Richard C. Roe, Palatine, Ill., assignor to Sealy, Incorporated, Chicago, Ill.

Filed Dec. 27, 1971, Ser. No. 212,385
Int. Cl. A47c 23/00
U.S. Cl. 5—354 8 Claims



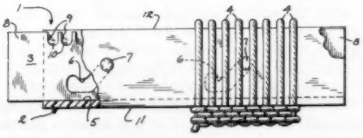
A wire mesh pad for a mattress box spring utilizing torsion bar springs to prevent layers of sisal, cotton, wool, latex or other suitable materials placed on top of the springs from moving downwardly into the springs and detracting from a smooth, attractive appearance on the upper surface of the box spring. The wire mesh pad comprises two side border members of wire elements extending transversely between the border members. The wire elements are made of high strength steel or oil-tempered spring steel, are spaced from one another in the range of about ¾ to 1¾ inches and have a tensile strength greater than 200,000 lbs. per square inch. The border members are plastic- or paper-coated metal rods that are attached to the torsion bar springs of the box spring unit. Paper cords extending parallel to the side border members are attached to the wire elements to maintain the position of the wire elements relative to one another.

3,827,091

CROCHET LOOP GAUGE

Lorraine E. Hocevar, 116 S. Rd., Kohler, Wis. 53044

Filed June 11, 1973, Ser. No. 368,694
Int. Cl. D04b 3/00
U.S. Cl. 66—1 A 11 Claims

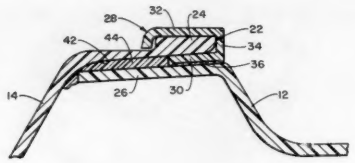


The gauge of the invention comprises an elongated generally planular body having a longitudinal slot therein for receiving a notch plate which is slideable within the body. The plate is movable between a raised position for receiving yarn wound thereover and a lower or collapsed position for removal or repositioning of the yarn. The exposed notch plate edge is provided with notch means and at least in some instances the bottom of the notch means is disposed above the gauge body edge when the plate is raised. The notch plate is held in raised position by any suitable means, such as friction.

3,827,092
BOAT TRIM CONSTRUCTION

Frank W. Butler, 3807 Weatherly Cir., Westlake Village, Calif. 91324

Filed Apr. 23, 1973, Ser. No. 353,443
Int. Cl. B63b 3/00
U.S. Cl. 9—6 8 Claims

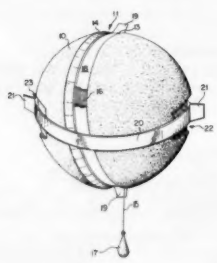


A boat construction to secure the sheet material deck to the sheet configuration of the gunwales of the hull wherein an elongated U-shaped trim strip is employed, the edge of the deck to be positioned between the inner and outer legs of the strip, the inner leg being in direct contact with the gunwales, an adhesive in viscous liquid form to be located between the deck and the gunwales and in contact with the inner leg, the strip and the edge of the deck to be forcibly moved outwardly to permit insertion of the adhesive.

3,827,093
MARKING FLOAT

Thomas S. Davis, 636 Woodley Rd., Maitland, Fla. 32751

Filed Aug. 23, 1972, Ser. No. 282,931
Int. Cl. B63b 21/52
U.S. Cl. 9—8 R 10 Claims

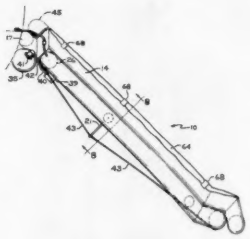


A rigid foamed synthetic plastic in a generally spherical shape is provided with a groove around its entire periphery fixedly receiving one end of a line having its intermediate portion generally uniformly wound within the groove. The wound line is covered and securely held within the groove by means of one or more encircling resilient bands, with the opposite end of the line extending between the bands or from underneath one band to its connection with a weight. When marking a spot in the water, the weight will pull the line from beneath the rubber band or bands, which act as an unwinding brake, until the weight strikes the bottom of the body of water with the foamed plastic sphere floating on top of the water; thereafter, the band will resist or prevent further unwinding of the line. To prevent unwinding of the line, a second resilient band may be provided in a plane perpendicular to and encircling the first band. Tabs on the bands will facilitate their removal, when desired.

3,827,094
INFLATABLE LIFE RAFT ESCAPE SLIDE

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,120
Int. Cl. B63c 9/04; B64d 25/14
U.S. Cl. 9—11 A 3 Claims

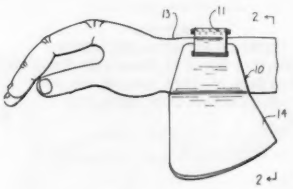


An improved inflatable life raft escape slide having a plurality of inflatable tube members which, upon inflation, define an escape slide that is also usable as a life raft. A plurality of inflatable auxiliary tube members are cooperative with the escape slide which, upon inflation, deploys a canopy that protects the occupants of the slide raft when used as a raft.

3,827,095
SWIM FIN

Alec Feather, 1701 Sunrise Ln., Fullerton, Calif. 92633

Filed Mar. 12, 1973, Ser. No. 340,223
Int. Cl. A63b 31/00
U.S. Cl. 9—307 6 Claims



A swim fin having a support strap attachable to the forearm of a user with a lower portion of the strap extending transversely of the under surface of the forearm. Laterally spaced fin members depend from lower portion of the strap and extend rearwardly and outwardly away from each other and move inwardly and outwardly in response to a forward return stroke and a rearward thrust stroke, respectively. Resilient means restrains outward movement of the fin members in proportion to the force applied to produce resistance to the water in proportion to the force applied.

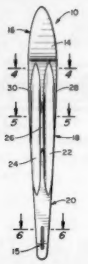
3,827,096
WATER SKI CONSTRUCTION

Ivan Frank Brownson, 16425 Otsego, Encino, Calif. 91316

Continuation-in-part of Ser. No. 180,612, Sept. 15, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,889
Int. Cl. A63c 15/00
U.S. Cl. 9—310 A 3 Claims

A water ski construction wherein the lower surface of the ski is smoothly contoured in the forward zone, the ski contains a double channel in the mid zone with the channels being

separated by a longitudinal convex ridge, the height of the ridge in the mid zone being less than the height of the edges of



the ski, the aft zone of the ski being tapered and also being smoothly contoured, a fin may be provided in the aft zone for lateral stability.

3,827,097

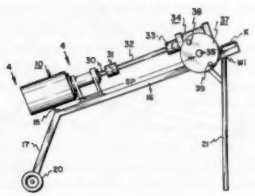
DEVICE FOR WASHING AND COILING HOSES

Raymond J. Hamann, Rt. No. 3, Box, La Grande, Island City, Oreg. 97202

Filed Feb. 26, 1973, Ser. No. 335,664

Int. Cl. B65h *75/34;* **D06g** *1/00*

U.S. Cl. 15—40 **4 Claims**



Hose washer and spindle structure wherein a hose, such as a fire hose or an agricultural irrigation hose, may be simultaneously washed and also wound in coil form upon a spindle.

The subject structure includes a washer and guide chamber having provision for inwardly directed water sprays. The guide chamber is aligned with but positioned remote from a spindle that revolves and hence wraps or winds the hose as the same proceeds through the guide chamber. The structure is designed for a maximum stability during the washing and wrapping operation.

3,827,098

PORTABLE SANITARY PUTRESCIBLE MATERIAL COLLECTOR ASSEMBLY

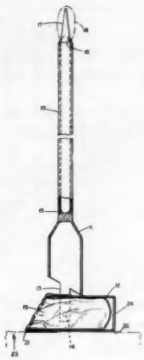
Edward Sanderson, 135 Terrace Ave., Upper Darby, Pa. 19082

Filed Nov. 24, 1972, Ser. No. 308,969

Int. Cl. A01k *29/00;* **A47l** *13/52*

U.S. Cl. 15—104.8 **1 Claim**

A receptacle is pivoted to a handle so that it may assume both a horizontal position for accepting putrescible material from the surface on which it is lying, and a vertical position for compact storage and when removing the putrescible material. The handle is hollow and serves as a storage area for a sweepstick when the sweepstick is not in use. The handle bottom



forms a tight fitting cover for the receptacle when vertical. Both the working end of the sweepstick and the interior of the receptacle are equipped with disposable sanitary coverings.

3,827,099

DISPOSABLE MOP HEAD

Eugene Joseph Allaire, 5525 Trent Ave. Apt. 207, Montreal 267 P. Que., and Eugene Paradis, 4933 Coolbrook, Montreal 248 P. Que., both of Canada

Filed Nov. 29, 1972, Ser. No. 310,606

Int. Cl. A47l *13/20*

U.S. Cl. 15—229 R **3 Claims**

A disposable mop head made up of a support having a backing face over which are secured a number of elongated flexible sheets made of a material capable of collecting dust and light dirt. The sheets, which are distributed over substantially all of the backing face, are secured to it along one of their longitudinal edges and extend away from the backing face. They are also formed with slits that run from their other longitudinal edge and that terminate short of their edge secured to the backing face to create a mass of flexible mopping strips. The material capable of collecting dust and light dirt is a fibrous material such as paper, sisal, hemp, cotton, wool, flax, jute, crepe paper or the like natural fibrous material. It may also be a synthetic fibrous material.

3,827,100

FLOOR WAX APPLICATOR WITH THROW-AWAY HEAD

Dana K. Griffin, 24714 Madison Ct. Apt. 296, Farmington, Mich. 48024, and John R. Wilson, 3203 E. Bradford Dr., Birmingham, Mich. 48010

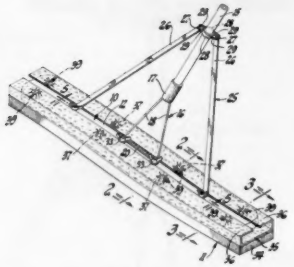
Filed Mar. 28, 1973, Ser. No. 345,519

Int. Cl. A47l *13/255, 13/46*

U.S. Cl. 15—229 A **10 Claims**

A wax applicator provided with a throw-away wax applicator head. The wax applicator includes an elongated carrier member to which is rigidly secured an elongated pulling handle. The carrier member includes an upper rigid portion and a lower cushion portion. The disposable wax applicator head is mounted against the lower cushion portion and it includes a

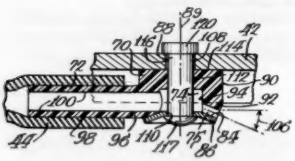
wax applicator element made from an absorbent material and which is centrally attached to a sheet of non-woven, non-absorbent backing material that is folded upward and over the carrier member upper rigid portion and secured thereto by releasable retainer means.



3,827,101
ARM MOUNTED WINDSHIELD WASHER JET

Leo J. Wubbe, Beverly Shores, Ind., assignor to The Anderson Company, Gary, Ind.

Filed Mar. 8, 1973, Ser. No. 339,394
Int. Cl. B60s 1/46, 1/52
U.S. Cl. 15—250.04 **12 Claims**



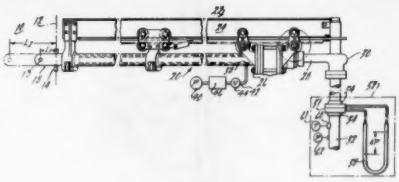
A windshield washer jet mountable to the arm of a windshield wiper assembly has a distribution chamber connectable with a fluid reservoir by means of a hose running along the length of the arm and pairs of jet outlet passageways extending outwardly from the distribution chamber for directing a stream of fluid from the distribution chamber onto the windshield on either side of the wiper blade and toward both ends thereof respectively. The distribution chamber and passageways are formed when the openings of a distribution cavity and jet outlet grooves in the bottom surface of a molded plastic washer body are closed by a cover plate. A rivet or the like extending through the cover, the center of the distribution cavity and a rivet hole in the top of the arm secures the cover to the bottom of the washer body to form the distribution chamber and jet outlet passageways and secures the washer jet body to the arm.

3,827,102
SOOT BLOWER WITH GAS TEMPERATURE OR HEAT FLOW DETECTING MEANS

Eugene F. Adiutori, Cincinnati, Ohio, assignor to Diamond Power Specialty Corporation, Lancaster, Ohio

Continuation of Ser. No. 226,083, Feb. 14, 1972, abandoned. This application May 14, 1973, Ser. No. 360,362
Int. Cl. A47l 5/38
U.S. Cl. 15—317 **7 Claims**

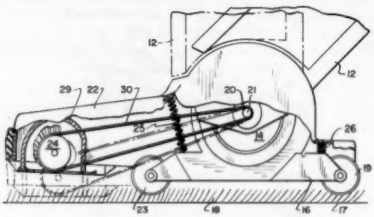
A retractable soot blower is used as a temperature detector or a heat flow detector. The lance tube of the blower acts as a temperature or a total heat sensing probe in addition to performing its normal boiler cleaning function, and when inserted in the combustion chamber of a steam generator, boiler, or the like, the temperature of the pressurized blowing medium, or the total heat flow into the blowing medium, is determinable as a function of the pneumatic resistance of the discharging orifice of the lance tube. The detector is adapted to provide the heat flux profile of the chamber during movements of the lance tube, and can be utilized in conjunction with various control apparatus to selectively meter unvaporized water to the blowing medium during cleaning operations in response to changes in heat flow into the blowing medium.



3,827,103
VACUUM CLEANER

Erwin E. Nordeen, St. Paul, and Milton J. Johnson, Rosemount, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 19, 1970, Ser. No. 38,805
Int. Cl. A47l 5/34
U.S. Cl. 15—359 **4 Claims**



A vacuum cleaner comprising a carriage with wheel supports, a motor driven suction unit on the carriage having a motor shaft that is generally horizontal and transverse to the carriage, a nozzle unit mounted on and enclosing the carriage including the wheels and having a brush contacting front end with the nozzle unit being rockable or pivotable for cleaning contact with the floor and spring means normally urging the nozzle unit brush in the downward direction to provide a floating type nozzle for an upright vacuum cleaner which automatically adjusts to different heights of carpet to retain the brush contacting front end of the vacuum cleaner in proper cleaning relation to carpeting on the floor.

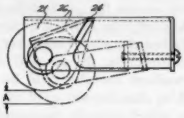
3,827,104
PATIO DOOR ROLLER

Martin R. Lambertz, New Hamburg, Ontario, Canada, assignor to Hahn Brass Limited, New Hamburg, Ontario, Canada

Filed Aug. 13, 1973, Ser. No. 388,002
Int. Cl. B60b 33/00
U.S. Cl. 16—18 **7 Claims**

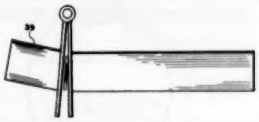
An adjustable, inexpensive patio door roller in which the roller is rotatably mounted at a dependent end of a housing which is provided with a weakened section about which section the dependent end may be bent so as to adjust the relative

position of the roller with respect to the housing. A stirrup and adjusting screw are provided to facilitate the adjustment. The



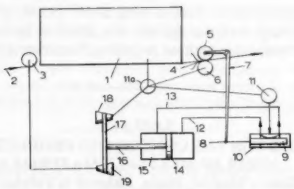
roller may be screwed to a patio door or secured thereto by a combination of screws and retaining prongs which are inserted into correspondingly placed slots.

3,827,105
DOOR CLOSING DEVICE
Jean Marie Branchaud, 3655 Papineau St., Apt. 403, Montreal, Quebec, Canada
Filed Oct. 30, 1972, Ser. No. 302,051
Int. Cl. E05f *1/12*
U.S. Cl. 16—190 **2 Claims**



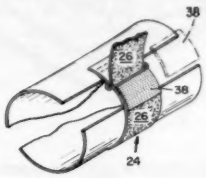
A door closing device is constituted by a hinge, whose plates are perforated. A tube is welded to each plate around the perforations and a coil spring extends through both tubes. One end of the coil spring is fixed to the end of one tube and the other end of the spring is free to slide in the other tube. When the two plates pivot one about the other, the spring forms a curve between the plates and its flexion urges the two plates together.

3,827,106
APPARATUS FOR CONTROLLING THE COUNT OF A SLIVER FED FROM A CARDING MACHINE
John Maximilian Jules Varga, Halifax, England, assignor to Carding Specialists (Canada) Limited, Toronto, Canada
Division of Ser. No. 854,170, Aug. 29, 1969, Pat. No. 3,644,964. This application Nov. 29, 1971, Ser. No. 202,927
Claims priority, application Great Britain, Sept. 3, 1968, 41750/68
Int. Cl. D01h *5/38*
U.S. Cl. 19—240 **4 Claims**



The invention comprises apparatus for controlling the count of a sliver whilst being fed from a carding machine to ensure a substantially uniform sliver, the sectional size of the sliver being related to a valve setting and passed through sensing means so that any slight variation in the sliver size is sensed and magnified to operate the valve which operates a fluid motor which in turn operates variator control means capable of causing correction of the sliver size.

3,827,107
ADJUSTABLE STRAP ASSEMBLY
Robert R. Moore, 5401 San Leandro St., Oakland, Calif. 94601
Filed Jan. 10, 1973, Ser. No. 322,507
Int. Cl. A44b *21/00*; B65d *63/00*
U.S. Cl. 24—16 R **12 Claims**



A strap or belt assembly in which a strap is attached to one portion of a garment, orthopedic brace or the like. Another portion of such garment is provided with a ring or buckle through which the strap end may be passed and pulled upon to variably tighten the garment portions. One surface of the strap is provided with the loop portion of a pile fabric of the type shown in U.S. Pat. No. 3,009,235. A piece of material having locking hook elements is fixedly or removably secured to the strap in such manner that the strap can be releasably locked adjacent the buckle irrespective of the respective positions of the two garment portions.

3,827,108
NECKTIE HOLDING METHOD AND COMBINATION
Vernon L. Jewett, 15 Tennyson Rd., Wellesley Hills, Mass. 02181
Filed Apr. 20, 1973, Ser. No. 352,936
Int. Cl. A41d *25/06*
U.S. Cl. 24—49 CF **6 Claims**

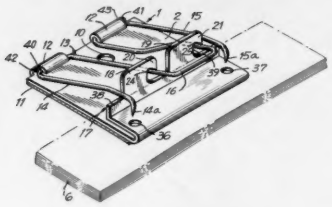
A device comprising a continuous strip of material formed in two superimposed loops biased together in the axial direction is used in holding a four-in-hand necktie laterally in place. That is, two substantially complete, 360° loops are formed in superposition to one another, the nature and formation of the material being such that the two loops are resiliently biased together. One end of the device is inserted through a shirt buttonhole and the device rotated one full turn or so, whereby the necktie may be placed through the loops with the device secured to the wearer's shirt. The device is preferably formed of metal or plastic, the loops having an inside diameter approximately as large as the width of the tie at the nominal position intended to pass through the loops.

3,827,109

CLAMP DEVICE FOR RELEASABLY SECURING A STACK OF SHEETS TOGETHER WHILE ENABLING THE SHEETS TO BE SUCCESSIVELY TORN AWAY

John D. Langwell, 28 Branch Ave., Freeport, N.Y. 11520

Filed Jan. 29, 1973, Ser. No. 327,297
Int. Cl. B42f *1/00*
U.S. Cl. 24—67.5 **16 Claims**



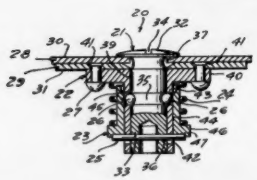
A clamp device comprising a base member on which the edges of a stack of sheets of material can rest. A continuous length of wire is formed with opposite arms having pointed ends, and the wire is hingeably supported from the base member for movement between a raised inoperative position and a lowered operative position. In the operative position the topmost sheets of material are pierced by the pointed ends of the wire and the stack is securely clamped against the base member. In the inoperative position the pointed ends are raised above the stack. An operating handle is formed in the wire and the handle serves to move the arms between the operative and inoperative positions. A support is formed on the base member at a position to engage the operating handle when the pointed ends approach the operative position to force the pointed ends into the topmost sheets of material of the stack and to lock the handle to prevent return of the arms to the inoperative position. As the sheets are successively removed, the pointed ends progressively penetrate into the stack under the force imposed by the engagement of the operating handle with the support.

3,827,110

RIGID FASTENER

Theodore Dzus, Sr., West Islip, and Julius Frank Dzus, Islip, both of N.Y., assignors to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,984
Int. Cl. A44b *17/00*
U.S. Cl. 24—221 A **6 Claims**



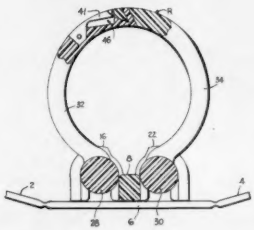
A fastener adapted to rigidly fasten two plates having aligned openings. The fastener includes a stud, a sleeve surrounding a portion of the stud and a hollow cap surrounding a portion of the sleeve. A resilient member is on the sleeve and the cap. Locking surfaces are provided including cooperating surfaces on the body of the stud, the sleeve and the cap and at least one bearing member which is shiftable between the locked and unlocked position. One of the stud and the sleeve has a spiral cam slot and the other of the stud and the sleeve has a diametrically extending pin mounted thereon so that when the sleeve is mounted to one of the plates and the stud is extended through the openings in the plates the cam slot will engage with the pin. Rotation of the stud in one direction with respect to the sleeve causes the pin to follow the cam slot, the resilient member to compress and the locking means to be activated to rigidly fasten the plates together. When the stud is rotated in a second direction, the pin will follow the cam slot, the bias on the resilient member will be relieved and the locking means will be deactivated until the cam slot is disengaged from the pin which permits disassembly of the fastener and the plates.

3,827,111

FASTENING MEANS FOR DETACHABLY SECURING TOGETHER MATING ENDS OF A BINDER RING CONSTRUCTION AND THE LIKE

James P. O'Connell, Three Rosemont St., Malden, Mass. 02148

Filed Dec. 28, 1971, Ser. No. 212,903
Int. Cl. B42f *3/04*
U.S. Cl. 24—230 CF **1 Claim**



Interlocking ring sections detachably secured together and releasable by a simple thumb pressure movement are formed at opposite ends of a binder ring construction to provide for conveniently joining the ends together and loosely holding sheets, cards, notebook paper and similar articles. The interlocking sections include a receiver section and a complimentary keying ring section. A flexing tongue yieldably supported in the receiver section prevents accidental disengagement and yet may be moved from a positive locking position into a released position by a simple thumb pressure. When combined with a pair of rotatably ring shafts in fixed and centrally located positions thereon, the interlocking ring sections are operable to open and close other pairs of mating ring sections supported on the rotatable ring shafts at outer ends thereof. Torsion forces of significant magnitude generated in each of the rotatable ring shafts in opposed relationship to one another when the centrally disposed interlocking ring sections are closed operate to hold mating ends of outer pairs of conventional ring sections against one another in tightly compressed relationship without requiring hand manipulation.

3,827,112

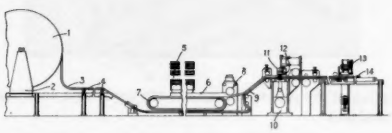
METHOD FOR THE CONTINUOUS PRODUCTION OF NEEDLED MULTI-PLY MATERIALS

Antonio Betere, Madrid, Spain, assignor to Fabricas Lucia Antonia Betere, S.A., Madrid, Spain

Division of Ser. No. 112,319, Feb. 3, 1971, Pat. No. 3,755,863.
This application July 19, 1973, Ser. No. 380,813
Int. Cl. D04h *18/00*
U.S. Cl. 28—72.2 R **1 Claim**

A method for the continuous production of composite multi-ply material intended for use in mattress making, for

upholstery and the like. The method includes combining a sheet of foamed material with a sheet of textile material to form the multi-ply web, needling the multi-ply web to cause securement of the individual sheets together and cutting of the needled, multi-ply web into predetermined lengths. The needling is effected by initially penetrating both the center



and edge portions of the web and subsequently by penetrating, at selected intervals, strips extending transversely across the web with the needle penetrating density at the edge portions and transverse strips being higher than the penetration density in the center portion of the web. The cutting is effected by transversely cutting the web along the needled strips.

3,827,113

PROCESS FOR SIMULTANEOUSLY TEXTURIZING A PLURALITY OF YARNS

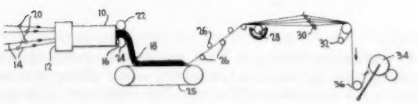
Roger Vidal, Champagne, and Raymond Gourmandy, Lyon, both of France, assignors to Societe Rhodiaceta, Paris, France

Filed Oct. 13, 1971, Ser. No. 188,775

Claims priority, application France, Oct. 15, 1970, 70.38079; Oct. 15, 1970, 70.38080; June 22, 1971, 71.22959

Int. Cl. D02g *1/12*

U.S. Cl. 28—72.14 **8 Claims**



A process for simultaneously texturizing a plurality of yarns including feeding a plurality of yarns separately through the inlet of a texturizing device to a cylindrical chamber, supplying a hot compressed fluid to the cylindrical chamber to advance the yarns therein, the hot compressed fluid escaping into an outer closed chamber, and maintaining the outer chamber at a pressure less than the feed pressure of the hot compressed fluid and greater than atmospheric pressure.

3,827,114

PROCESS FOR STEAM JET TEXTURING A COATED YARN

Roger John Crossfield, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed Sept. 7, 1971, Ser. No. 178,437

Int. Cl. D02g *1/16, 3/36*

U.S. Cl. 28—75 WT **2 Claims**

A synthetic fiber finish which provides improved processing performance, heat stability, and the like, and comprises a heat stable, hydrophobic fatty acid ester lubricant a heat stable, hydrophilic antistat of an alkoxylated polyhydric alcohol-fatty acid ester or an alkoxylated alcohol ester; and a heat stable, hydrophilic emulsifier comprising alkylene oxide condensate of polyhydric alcohols and/or long chain fatty acid esters or alkylene oxide condensates of an alkaryl hydroxy-terminated compound.

3,827,115

METHOD OF MANUFACTURING A CATHETER

Nicolaas Bom, Berkenwoude, Netherlands, assignor to Erasmus Universiteit Rotterdam, Rotterdam, Netherlands

Filed Feb. 21, 1973, Ser. No. 334,300

Claims priority, application Netherlands, Feb. 22, 1972, 7202282; Mar. 10, 1972, 7203176

Int. Cl. B01j *17/00*

U.S. Cl. 29—25.35 **14 Claims**

A device for examining the heart is provided with a catheter adapted to be placed within the heart and including at one end thereof, circumferentially arranged, equidistantly distributed elements, serving for the transmission and reception of ultrasonic waves. The catheter has an axis and the elements have no directivity in a plane perpendicular to this axis. The elements are so dimensioned in axial direction that in a plane through the axis they do show directivity. An excitation device is provided which successively excites groups of adjacently arranged elements and time delays are provided for delaying the transmitted and received pulses for the elements of a group that the differences in travel times are compensated. An adder is provided for the summation of echo pulses and a device is provided for visually displaying the part of the examined heart surrounding the catheter. A method is provided whereby the elements are provided on the catheter by positioning a piezoelectric cylinder on a core and thereafter sawing through the cylinder along a plurality of radial planes interspaced at equal angular distances. The catheter which is derived from the method is also part of the invention.

3,827,116

ROTARY MATERIAL WORKING APPARATUS

William M. Carroll, 1111 E. Dean Rd., Milwaukee, Wis. 53217

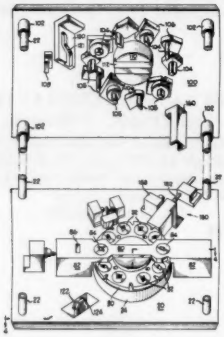
Continuation-in-part of Ser. No. 161,183, July 9, 1971, abandoned. This application July 11, 1973, Ser. No. 378,205

Int. Cl. B23p *23/00*

U.S. Cl. 29—38 C **19 Claims**

An apparatus for performing multiple forming and material working operations on a plurality of identical workpieces. The disclosure includes a plurality of coacting die units or work stations carried by vertically reciprocal die shoes. Also carried by one of the die shoes is a work-holding turntable adapted to receive and automatically index workpieces to succeeding work stations located around one-half of the periphery of said

turntable while simultaneously advancing other workpieces to similar work stations located around the opposite half of said



turntable. At the last station on each half of the turntable, the finished workpieces are ejected, said apparatus producing finished parts at a high rate with a minimum of scrap.

3,827,117

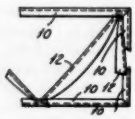
METHOD FOR MAKING TRUSS MEMBERS

Melvin L. Ollman, Detroit, Mich., assignor to C-O, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 129,040, March 29, 1971, abandoned. This application Apr. 11, 1973, Ser. No. 350,158

Int. Cl. B23p *17/00*

U.S. Cl. 29—155 R **7 Claims**



A method and apparatus for forming truss members which comprise oppositely disposed channel members and struts interconnected to one another by alternately extending apices wherein the apices are welded to the channel members. The method and apparatus provides for simultaneously forming channel members from a pair of endless strips and the strut members from an endless third strip, guiding the channels in a predetermined relation to one another with the third strip therebetween and thereafter welding the apices to the channel members.

3,827,118

AIRFOIL AND METHOD OF FORMING THE SAME

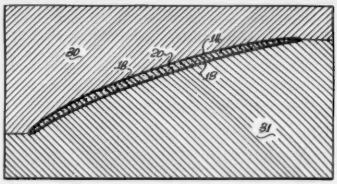
Gerhard H. Appel, Redondo Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 93,095, Nov. 27, 1970, abandoned. This application July 17, 1972, Ser. No. 272,502

Int. Cl. B21k *3/04*; **B23p** *15/04*

U.S. Cl. 29—156.8 B **9 Claims**

An airfoil and method for its forming, the airfoil having a foreign object damage and erosion resistant outer skin or shell and an inner body composed of resin-impregnated fiber with high fiber to resin content, the resin being cured during the ap-



plication of the skin to the inner body to provide an integrally bonded unit.

3,827,119

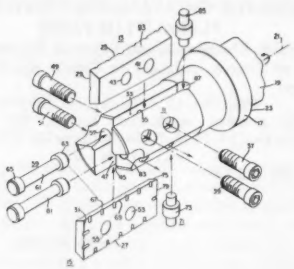
TOOL HOLDER WITH PROVISIONS FOR ACCURATELY POSITIONING CUTTING INSERTS AND AN IMPROVED CHIP BREAKING INDEXIBLE INSERT

John T. Bennett, 47 Paper Mill Ln., Newtown Square, Pa. 15078

Division of Ser. No. 285,121, Aug. 31, 1972, which is a division of Ser. No. 19,023, March 12, 1970, Pat. No. 3,688,367. This application Sept. 7, 1973, Ser. No. 395,226

Int. Cl. B26d *1/12*

U.S. Cl. 29—105 R **5 Claims**



A tool holder having at least one cutting insert (blade) receiving slot that is formed in part by a pair of spools at adjacent small side areas of the slot. The spools are held at a finite angle with each other which matches the angle between adjacent edges of a blade to be inserted in the slot. The spools provide a ridge to contact blade edge surfaces for only a small portion of their width. An application of this blade positioning technique is a multiple indexible blade rotary tool holder. Indexible blades for use in a wide variety of tool holders have improved chip breaking grooves adjacent to its cutting edges in surfaces thereof which lead into the work piece.

3,827,120

COVERING FOR ROLLS OF TEXTILE MACHINES

Fritz Mayer, Weinheim, Bergstrasse, Germany, assignor to Carl Freudenberg, Weinheim/Bergstrasse, Germany

Continuation-in-part of Ser. No. 191,467, Oct. 21, 1971, abandoned. This application June 4, 1973, Ser. No. 366,951

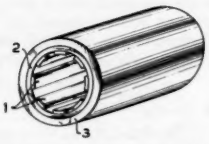
Claims priority, application Germany, Oct. 24, 1970, 2052249

Int. Cl. B21b *31/08*

U.S. Cl. 29—129 **6 Claims**

A roll cylinder having a smooth surface and a full-length axle and being free of surface indentations covered with a roll covering comprising a tubular core, a layer of elastomeric material externally mounted on said core and at least one

elastomeric rib element internally connected to said core facing and abutting the smooth unindented surface of said roll cylinder; a roll covering adapted to engage the smooth unindented surface of a roll cylinder having a full length axis comprising a tubular core, a layer of elastomeric material externally mounted on said core and a plurality of elastomeric rib elements internally connected to said core and adapted to abut and engage a smooth surface full length roll cylinder on the surface thereof.

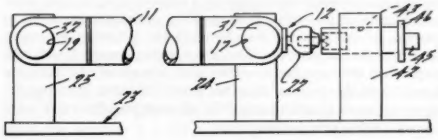


3,827,121

METHOD OF AND APPARATUS FOR REPAIRING CARDAN TYPE UNIVERSAL JOINTS AND PROTECTIVE BOOT

Ralph M. Frederick, 2124 Lakeview Dr., Ypsilanti, Mich. 48197

Filed Mar. 14, 1973, Ser. No. 341,240
Int. Cl. B23p *11/00, 7/00, 19/04*
U.S. Cl. 29—149.5 B **3 Claims**



A method of and apparatus for repairing the worn balls of the ball and socket connections for double Cardan type universal joints. The apparatus includes a fixture that cooperates with the yokes of the drive shaft for accurately locating the drive shaft. The worn ball is then machined off to leave a pilot portion having an accurately formed locating surface. A new ball having an opening complementary to the pilot portion is press fit onto the pilot portion to complete the repair. In addition, a protective boot is disclosed for protecting the ball and socket connection of the repaired joint to prevent dirt and other abrasives from impinging on the sliding surface of the joint.

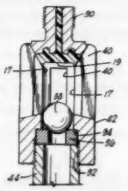
3,827,122

CHECK VALVE CAGE APPARATUS AND METHOD OF MAKING SAME

Bobby L. Douglas, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 19, 1973, Ser. No. 324,919
Int. Cl. B21d *53/00*
U.S. Cl. 29—157.1 R **5 Claims**

A check valve cage is fabricated by injecting a reinforced thermal setting plastic through a channel extending along the central longitudinal axis of a cylindrical body. A form pin is inserted through a coaxial longitudinal bore at the other end of said cylindrical body, said bore having an increased diameter central portion for receiving the injected thermoplastic material. After the plastic material has set, lateral flow passages are formed in the wall of the cylindrical body. Shallow drilled holes within the central cavity of the body, upon being filled with the injected plastic material, prevent rotation of the plastic lining of the cage assembly.

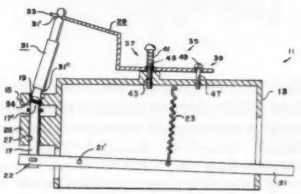


3,827,123

TAPE CUTTING AND ATTACHING DEVICE

Jacob Hoffman, 670 Waring Rd., Memphis, Tenn. 38122

Filed Feb. 12, 1973, Ser. No. 331,966
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 B **10 Claims**



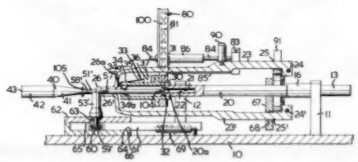
A device for cutting circular blanks out of double-sided pressure-sensitive tape and for attaching the blanks to an arbor of a contact lens adjusting, modifying or finishing machine whereby a contact lens may be affixed to the arbor by means of the double-sided pressure-sensitive tape. The device includes a die and a punch for coacting together to cut out the circular blank and includes a means for holding the arbor in a position so that the punch will force the blank into engagement with the arbor.

3,827,124

MACHINE FOR CONVEYING EXPANDING AND APPLYING ENDLESS SEALING MEMBERS

Harvey Joseph Hervieux, deceased, late of Algoma Mills, District of Algoma, Ontario, Canada (by Bernice Hervieux, administratrix)

Filed May 11, 1973, Ser. No. 359,338
Int. Cl. B23p *19/00;* **B23q** *7/10;* **B23p** *19/02*
U.S. Cl. 29—200 A **11 Claims**



The invention provides an apparatus for deforming deformable endless sealing members and applying them in stretched condition to a workpiece. The apparatus has a guide

member, and the endless sealing members are fitted over one end and passed along it by a push mechanism. Supporting means are adapted to support the guide member while permitting the passage of the endless sealing members along it. The guide member terminates in an expansion mandrel which abuts the workpiece onto which the sealing members are to be placed.

The guide member and its supporting means can also be used without an expansion mandrel as a conveyor for endless members.

3,827,125

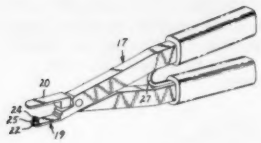
THREADLESS FASTENER SYSTEM

Gary B. Matthews, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 16, 1973, Ser. No. 332,796

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 D **14 Claims**



A threadless fastener system in which the leaves of a leaf spring fastener radiate from an aperture and are inclined to securely engage a locking shaft inserted into the aperture to prevent manual removal of the shaft. Unlocking of the fastener to permit reuse thereof is provided by an unlocking tongue having an axially slotted hollow cylinder which fits around the locking shaft of the fastener and is moved axially to engage and radially deflect the locking leaves of the fastener to disengage the same from the locking shaft.

3,827,126

BENT PIPE ASSEMBLING APPARATUS

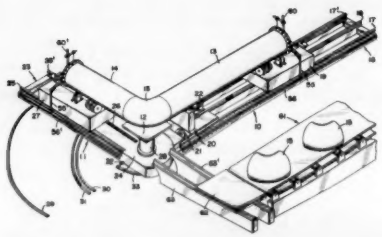
Kaoru Shiozawa; Tsugio Shirato, and Kiyoshi Hirose, all of Chiba, Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1973, Ser. No. 345,676

Claims priority, application Japan, Apr. 7, 1972, 47-35588

Int. Cl. B23k *37/04*

U.S. Cl. 29—200 P **6 Claims**



The bent pipe assembling apparatus of the present invention comprises two straight pipe positioning means and one elbow supporting table disposed between said two means, one of said two means being capable of rotating about said elbow supporting table, so that the bent pipe having accurate dimensions in the length and the angle of bending may be easily produced.

3,827,127

TIRE VALVE CORE MOUNTING APPARATUS

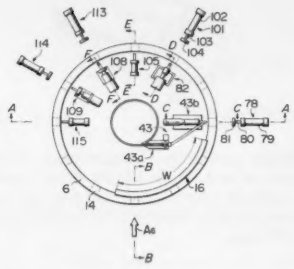
Akio Tanihata, and Norio Abe, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 30, 1973, Ser. No. 411,072

Claims priority, application Japan, Nov. 8, 1972, 47-111949

Int. Cl. B23p *19/04*

U.S. Cl. 29—240 **10 Claims**



Herein disclosed is a tire valve core mounting apparatus for mounting one or more valve cores into one or more valve stems. The tire valve core mounting apparatus comprises an annular member adapted to be intermittently rotated through a constant angle and having therein a plurality of valve stem holding bores being in circumferentially equidistant relation with respect to one another, each valve stem holding bore extending radially of the annular member, and a plurality of locking mechanisms mounted on the annular member for locking the valve stem in the valve stem holding bores, a valve core supplying and screwing arrangement fixed with respect to the annular member for supplying a valve core to a valve stem held in one of the valve stem holding bores per an angle of rotation of the annular member and for screwing the valve core into the valve stem, and disengaging means fixed with respect to the annular member and spaced in the rotation direction of the annular member from the valve core supplying and screwing arrangement for disengaging the valve stem from the valve stem holding bore.

3,827,128

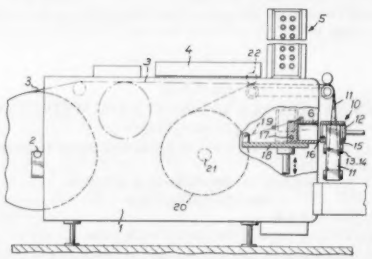
METHOD FOR PRODUCING CONTAINERS WITH COMPOSITE WALLS

Jean R. Nasica, Paris, France, assignor to Intercan S.A., c/o Fiduciaire Wanner S.A., Fribourg, Switzerland

Division of Ser. No. 161,872, July 12, 1971, Pat. No. 3,709,643, which is a continuation of Ser. No. 18,123, March 10, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 295,824

Int. Cl. B23p *17/00*; B29c *17/04, 27/16, 27/30*

U.S. Cl. 29—421 **5 Claims**



A method for producing in moulds plastic containers having at least one part of the lateral walls in the form of a reinforcing sheet.

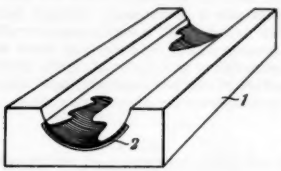
This method is particular in that in association with each female mould a sheet of thermoplastic material is advanced in a pre-determined path adjacent the open end of the female mould held in a shaping position. A loop is prepared from a sheet of reinforcing material at a location spaced from the path of the thermoplastic material. The mould is moved from the shaping position into alignment with the reinforcing loop, the reinforcing loop is introduced into the mould. The mould is moved into the shaping position with the reinforcing loop retained therein. The sheet of thermoplastic material within the reinforcing loop is expanded to conform with the interior surface thereof.

3,827,129

METHODS OF PRODUCING A METAL AND CARBON FIBRE COMPOSITE

Albert W. Denham, and Brian A. W. Redfern, both of Derby, England, assignors to British Railways Board, London, England

Filed Jan. 6, 1972, Ser. No. 215,785
Int. Cl. B23p *17/04*
U.S. Cl. 29—419 **12 Claims**



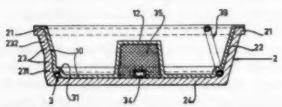
A process of producing a metal and carbon fibre composite in which carbon fibres are treated to produce a very thin coating on the surface and the treated fibres are then wetted by metal melts to which a particular alloying metal has been added. The fibres are treated with a metal carbide and the alloying metal is preferably of the same metal as that of the carbide. The carbon fibres are infiltrated into the matrix metal while the latter is in a molten state and the invention is particularly concerned with the production of a wetting interface between the metal alloys and the carbon fibres. The method enables shaped bodies such as shaft bearings to be made in a convenient manner. The composite may have other forms such as continuous tapes for subsequent assembly into more complex shapes.

3,827,130

METHOD OF MAKING THERMOPLASTIC LINED METAL BODIES

Bernard Baumann, Paris, France, assignor to CEGEDUR Societe de Transformation de l'Aluminium PECHINEY, Paris, France

Division of Ser. No. 73,446, Sept. 18, 1970, Pat. No. 3,794,203. This application June 25, 1973, Ser. No. 372,961
Int. Cl. B23p *17/00*
U.S. Cl. 29—421 **5 Claims**



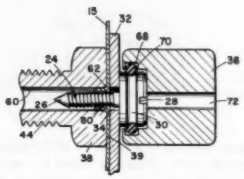
Fuel tank and other hollow metal bodies internally lined with a thermoplastic material wherein a heated sheet of the thermoplastic material is laid over the previously formed hollow metal body with the plastic sheet in engagement with the edge of said body and the sheet is deformed to correspond to the internal shape of said body by drawing a vacuum through a foramenous vacuum tubing which remains entrapped between said sheet and body to become a part thereof and which includes the addition of porous and permeable bodies connected to the vacuum system for formation of said sheet liner with sections which extend from the metal body, and fuel tanks formed by the joinder of such lined body portions in sealed relation along the meeting edges of the plastic lining.

3,827,131

METHOD OF SWAGE NAIL FASTENING

Robert Peyton Coltrin, 678 Skyview Dr., El Cajon, Calif. 92020

Filed Feb. 5, 1973, Ser. No. 329,641
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.1 **2 Claims**



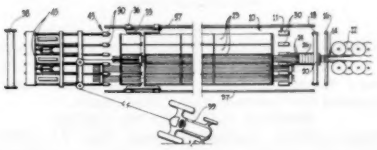
A fastening system including a tool adapted for use in conjunction with a specialized fastener together with the method for fastening operations. The specialized fastener has a threaded shank portion with a piercing tip. The shank is connected to an enlarged head portion which is in the form of a cylindrical slotted head. The sides of the cylinder are utilized in aligning the fastener in the clamping tool. A circumferential groove is provided to cooperate with an O-ring retention device. The fastener is received in the head portion of a clamping device and retained by an O-ring to align and retain the shank portion with the bore of an anvil. The anvil is positioned on the opposite side of the sheet material to which the fastener is applied. Pressure from the clamp forces the piercing tip through the sheet material and a portion of the sheet material is swaged into the threaded portion of the fastener by the anvil. The threads may be utilized to withdraw the fastener by the use of a screwdriver with the slotted head.

3,827,132

PRESTRESSED ROD LAYING MEANS AND METHOD

Robert Lyndon Bratchell, Ottoway, South Australia, assignor to Concrete Industries (Monier) Limited, Ottoway, South Australia

Filed Oct. 10, 1972, Ser. No. 295,921
Claims priority, application Australia, Nov. 11, 1971, 6968/71
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 **10 Claims**



Means for laying a series of wires in parallel array within a series of aligned moulds in a bay wherein concrete is to be poured while the wires are retained in a strained condition

comprising bolster means at each end of the bay, a series of reels at one end having the wires thereon, a series of blocks each containing apertures arranged in the pattern of the wires to be laid, abutment members for supporting blocks on each bolster, a trolley straddling the moulds and movable along the bay over the moulds, and collets on the wires arranged to frictionally engage respective wires when the collets are driven into respective apertures in a block.

3,827,133

METHOD OF FORMING A LOCKING RING FOR PRESSURE VESSEL

Jacques H. Mercier, 49 Rue de Naples, Paris, France

Division of Ser. Nos. 613,660, Feb. 2, 1967, Pat. No. 3,537,481, and Ser. No. 822,445, May 7, 1969, Pat. No. 3,640,172, Ser. No. 188,955, Oct. 13, 1971, Pat. No. 3,733,682.
This application Feb. 28, 1973, Ser. No. 336,840
Int. Cl. B23p *9/00*
U.S. Cl. 29—445 **1 Claim**

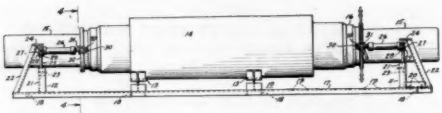
This invention relates to a method of forming a locking ring for the closure plug of a pressure vessel for storing fluid under pressure and particularly of the type having a deformable partition such as a bladder therein. The closure plug has a flanged inner end of diameter slightly less than the diameter of the port of the pressure vessel into which it is to be inserted and the locking ring normally is of greater diameter than said port and is foldable for insertion through said port so that it may then be restored to its original shape to encompass the closure plug and restrain outward movement thereof from such port.

3,827,134

APPARATUS FOR SHRINKING COLLARS ON A SHAFT

Richard L. Wechsler, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 61,531, Aug. 6, 1970, Pat. No. 3,725,994.
This application Nov. 13, 1972, Ser. No. 305,745
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 **10 Claims**



Method and apparatus for shrinking a metallic collar onto a shaft, with means provided for applying a coolant to the circumference of the collar while maintaining pressure thereon.

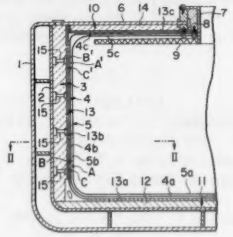
3,827,135

METHOD OF CONSTRUCTING A LOW TEMPERATURE LIQUEFIED GAS TANK OF A MEMBRANE TYPE

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,760
Claims priority, application Japan, Mar. 13, 1972, 47-24666
Int. Cl. B21d *39/00*; B23p *19/04*
U.S. Cl. 29—455 **7 Claims**

A method of constructing a low temperature liquefied gas tank of a membrane type comprising an inner membranous vessel provided at the inside of a rigid outer vessel with interposition of a heat insulating layer, characterized by the steps of constructing said inner membranous vessel in said outer vessel, urging flat side wall portions of said inner membranous vessel, after the completion thereof, toward the inside of said inner membranous vessel as much as to form a marginal slack corresponding to the contraction of said inner membranous



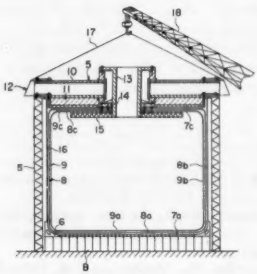
vessel in a low temperature operating condition, and filling up the space left between said outer vessel and said inner membranous vessel with a compression resistant heat insulating material while keeping said inwardly urged condition of said inner membranous vessel, whereby said inner membranous vessel is constructed so as to favorably fit the space defined by the inner surface of said heat insulating layer when it has contracted in a low temperature operating condition.

3,827,136

METHOD OF CONSTRUCTING A LOW TEMPERATURE LIQUEFIED GAS TANK OF A MEMBRANE TYPE

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Mar. 15, 1973, Ser. No. 341,724
Claims priority, application Japan, Mar. 25, 1972, 47-29417
Int. Cl. B21d *39/00*; B23p *19/04*
U.S. Cl. 29—455 **6 Claims**



A method of constructing a low temperature liquefied gas tank of a membrane type comprising an inner membranous vessel provided at the inside of a rigid outer vessel with interposition of a heat insulating layer, characterized by constructing an assembly including said inner membranous vessel and a carrying structure composed of a roof portion of said heat insulating layer, a roof portion of said outer vessel and a saddle frame for supporting bottom edge portions of said inner membranous vessel separately from said outer vessel having a hold space, mounting said assembly into said hold space, urging flat side wall portions of said inner membranous vessel toward the inside of the tank as much as to form a marginal slack corresponding to the contraction of said inner membranous vessel in a low temperature operating condition, and filling up the space left between said outer vessel and said inner mem-

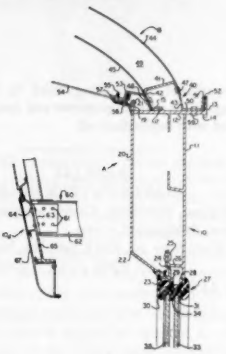
branous vessel with a compression resistant heat insulating material while keeping said inwardly urged condition of said inner membranous vessel, whereby the construction period of the tank is shortened and said inner membranous vessel is constructed so as to favorably fit the space defined by the inner surface of said heat insulating layer when it has contracted in a low temperature operating condition.

3,827,137

METHOD OF ASSEMBLING A VEHICLE ROOF AND SIDEWALL ON A COMPLETED BASE BY EXTERNAL JOINT STRUCTURES

Theodor C. Schubach, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Mar. 1, 1972, Ser. No. 230,689
Int. Cl. B23p *21/00*
U.S. Cl. 29—469 **2 Claims**



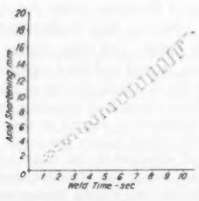
The roof structure of a ground transportation vehicle is manufactured as a unit, complete with all components, accessories, finish and trim, as are also each of the vehicle sidewalls, including the seats, which preferably are cantilever or semi-cantilever type. The completed roof structure and walls are then assembled and secured, by externally applied fastenings, in permanently interconnected relation on a base structure which has a finished floor covering laid thereon, so that the interior of the vehicle is then complete, or virtually complete.

3,827,138

FRICTION WELDING METHOD

James Christopher Needham, Saffron Walden; Colin Ronald George Ellis, Newton, and Rodger Hedley Lilly, Comberton, all of England, assignors to The Welding Institute, Abington, Cambridge, England

Filed July 8, 1971, Ser. No. 160,713
Claims priority, application Great Britain, July 9, 1970, 33447/70
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **3 Claims**



To join two workpieces by friction welding, in the period of axial shortening (due to burn-off) during relative rotation of the workpieces, the workpieces are compelled to approach one another at a rate dictated by an axial driving means, the rate of generation of frictional heat being automatically adjusted to give the required burnoff rate. The rate of axial approaching movement may be imposed by a screw feed or a cam or by a hydraulic cylinder supplied by a high delivery source through a controlling orifice.

3,827,139

MANUFACTURE OF ELECTRICAL METALLIC TUBING

Samuel L. Norteman, Wheeling, W. Va., assignor to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.

Filed June 23, 1972, Ser. No. 265,607
Int. Cl. B23k *31/02*
U.S. Cl. 29—477.7 **7 Claims**

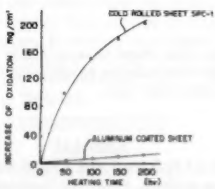
Electrical metallic tubing is manufactured from galvanized steel strip by forming the strip into tubular shape, welding the edges together and replacing the zinc lost in welding by gas or arc metallizing the weld zone first with aluminum and then with zinc.

3,827,140

METHOD OF SURFACE TREATING STEEL PRODUCTS WITH METAL POWDER

Hidehisa Yamagishi; Fumitoshi Yokoi, and Tsuyoshi Kutino, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Continuation of Ser. No. 865,885, Oct. 13, 1969, abandoned. This application Oct. 4, 1972, Ser. No. 294,898
Claims priority, application Japan, Oct. 17, 1968, 43-75468; June 23, 1969, 44-49207
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 **13 Claims**

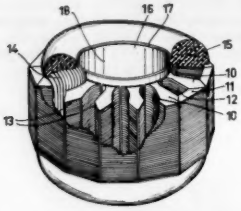


An aqueous suspension containing a metal powder having a particle size of less than 325 mesh is applied to the surface of a steel product. The coated steel product is than preheated, rolled and post-heated to form a protective coating of said metal.

3,827,141
METHOD OF MANUFACTURING AN ELECTRIC ROTARY MACHINE

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Division of Ser. No. 254,302, May 17, 1972, Pat. No. 3,792,299. This application Apr. 19, 1973, Ser. No. 352,736
Int. Cl. H02k *15/02*
U.S. Cl. 29—596 **6 Claims**



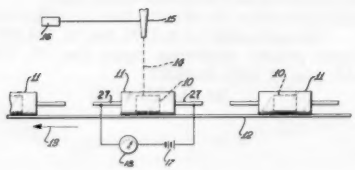
The invention relates to electric rotary machines.

It provides an electric rotary machine with a stator structure the stator teeth of which are shaped as separate elements and are bonded to the stator ring and the stator windings into a rigid assembly.

3,827,142
TUNING OF ENCAPSULATED PRECISION RESISTOR

Kenneth R. Bennett, San Diego, and Joseph W. Crownover, La Jolla, both of Calif., assignors to GTI Corporation, Pittsburgh, Pa.

Filed Dec. 11, 1972, Ser. No. 314,010
Int. Cl. H01c *7/00, 17/00*
U.S. Cl. 29—620 **5 Claims**



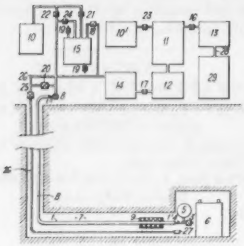
A long wave laser beam is controllably passed through a glassy envelope encapsulating an electrical resistor, to alter its resistance to a precision value.

3,827,143
OIL CABLE INSTALLATION METHOD

John Normann Johnsen, Oslo; Tor Vralstad, Eiksmarka, and Gunnar Wettre, Asker, all of Norway, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,677
Int. Cl. H01r *43/00;* **H05k**
U.S. Cl. 29—628 **4 Claims**

A system and method are provided for working on oil filled cables where there are substantial height differences between levels of the cable ends. Oil is drained from the lower level to a predetermined low pressure while the upper portion is maintained under a vacuum. Oil at the lower level may be frozen to

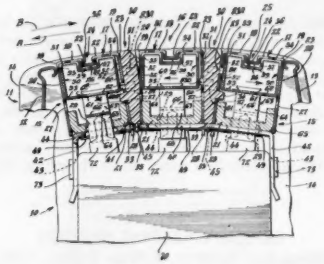


permit conventional terminating work to be done. Various valve and degasifying arrangements are employed. The cable is then refilled with degasified oil.

3,827,144
SHAVER CUTTER HEAD

Ronald G. Arpino, Branford, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Filed May 24, 1973, Ser. No. 363,475
Int. Cl. B26b *19/02, 19/04*
U.S. Cl. 30—43.92 **8 Claims**



An improved shaver cutter head, including an outer cutter, an inner cutter mounted within the outer cutter, and means for moving the inner cutter within the outer cutter in a predetermined path of travel. Each of the cutters has a hair-shearing first wall portion, the first wall portion of the mounted inner cutter being urged into engagement with the first wall portion of the outer cutter for shearing hair as the inner cutter is moved in said predetermined path of travel within the outer cutter. The outer cutter also has opposed, non-hair-shearing, second and third wall portions, respectively depending from the first wall portion of the outer cutter. The second wall portion is provided with an aperture, and the third wall portion is oriented to extend in the direction of movement of the inner cutter within the outer cutter. A resilient member disposed adjacent to the outer cutter's second wall portion, extends through the aperture therein and urges the moving inner cutter into sliding engagement with the third wall portion of the outer cutter. As a result, the moving inner cutter is directly guided by the third wall portion in the aforesaid predetermined path of travel.

3,827,145

ARTIFICIAL TOOTH STRUCTURE

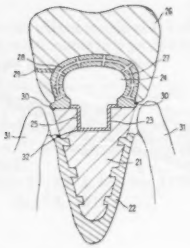
Wilfred Arthur Richards, Much Hadham, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Sept. 29, 1972, Ser. No. 293,745

Claims priority, application Great Britain, Sept. 30, 1971, 45468/71

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A 1 Claim



An artificial tooth comprising a crown section; a root section adapted to be inserted into an alveolus in the jaw of a vertebrate, the root section being formed by a member of a carbon material which is microcrystalline in structure and substantially impermeable and having at least one substantially cone-shaped projection adapted to fit approximately within the inner surface of the alveolus; and means resiliently securing the crown section to the root section. The resilient securing means are arranged such that they are capable of absorbing sudden shocks which might be applied to the artificial tooth structure such as by biting upon something unexpectedly hard.

3,827,146

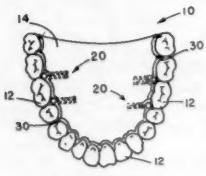
ORTHODONTIC COIL AND RETAINING DEVICE UTILIZING THE SAME

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y. 11230

Filed Nov. 29, 1972, Ser. No. 310,402

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 E 18 Claims



An orthodontic retaining device in the form of a removable partial denture or active orthodontic appliance that cooperates with teeth includes an acrylic member having an external peripheral portion configurated in the general archshape of a normal dentition of the teeth. A plurality of coils in the form of springs are at least partially embedded in the acrylic and positioned adjacent to the peripheral portion of the acrylic member. A portion of the spring, which may be of the same or a different pitch than the embedded portion, extends exteriorly of the acrylic member and is provided at its free end with a clasp or rest. The clasp is preferably in the form of a ball clasp or a bar clasp which engages the teeth when the partial denture or appliance is fully positioned interiorly of the arch of the teeth. The rest is so configurated so that it abuts the crown of a tooth and is securely lodged in a groove thereof when the partial denture is positioned lingually or palatally of the arch of the teeth. In each case, the exposed portion of the coil has limited freedom of movement. Turning of the coil about its axis within the acrylic member is limited by an extension at the free end of the embedded portion which defines a pitch other than the pitch of the embedded portion of the coil.

3,827,147

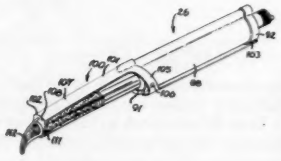
DENTAL TOOL

John J. Condon, 5901 N. Ledgewood, Spokane, Wash. 99207

Continuation-in-part of Ser. No. 135,595, April 30, 1971, abandoned. This application May 22, 1972, Ser. No. 255,861

Int. Cl. A61c *9/00*

U.S. Cl. 32—17 7 Claims



A dental tool is described for use in the impression process of dental prosthesis. The hand-held dental tool includes an impression material cartridge releasably connected to a cylindrical tool housing. A controlled amount of air pressure is directed from a source through a hose and into a bore of the cylindrical housing to force a freely movable piston against the rear end of an elongated plunger which has its forward end slidably mounted in the cartridge. The plunger, in turn, forces a flowable impression material along the interior of the cartridge to flow from a reduced opening.

3,827,148

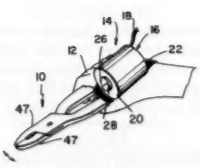
TOOTH EXTRACTION VIBRATOR

Joseph F. Diliberto, 41 Hill Top Cir., Worcester, Mass. 01609

Filed Nov. 6, 1972, Ser. No. 303,697

Int. Cl. A61c *3/10*

U.S. Cl. 32—61 1 Claim



A vibration device is provided for use with a tooth-extracting instrument. In one embodiment, the device comprises an integral power-driven unit adapted to be strapped to the hand holding the instrument. In another embodiment, both the instrument and the vibrating device are carried by an arm of a dental machine. The vibrations imparted to the instrument facilitate removal of the tooth.

3,827,149

DENTAL HANDPIECE

Thomas J. Brennan, Portage, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

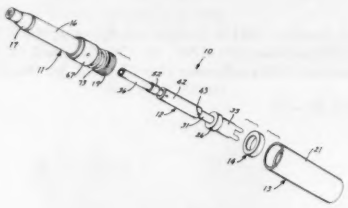
Filed Sept. 15, 1972, Ser. No. 289,209

Int. Cl. A61c *1/08*

U.S. Cl. 32—26 13 Claims

A handpiece assembly, particularly for a dental tool or the like, having a drive shaft assembly rotatably supported within a housing which is adapted to be manually held. The tool, such as a drill, is releasably connected to the drive shaft assembly

by means of a releasable coupling device which is non-rotatably supported on and axially movable relative to the drive shaft assembly, which rotates the drill. The coupling device and tool shank are provided with cooperating surfaces which prohibit relative rotation therebetween. The coupling



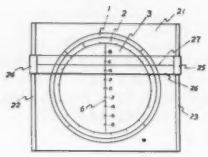
device can be manually moved axially of the shaft to disengage the tool, whereupon the tool can then be manually rotated to disengage it from the drive shaft so that the tool can then be axially withdrawn from the handpiece assembly. The coupling device includes brake means for resisting rotation of the drive shaft assembly during the insertion or removal of the tool.

3,827,150

DODGING COURSE CALCULATING DEVICE

Hiroshi Kubota, Takarazuka, Japan, assignor to Furuno Electric Company, Limited, Minamitakaki-gun, Nagasaki-ken, Japan

Filed Jan. 6, 1972, Ser. No. 215,871
Claims priority, application Japan, Jan. 21, 1971, 46-26379
Int. Cl. G01c *21/20*
U.S. Cl. 33—1 SD **1 Claim**



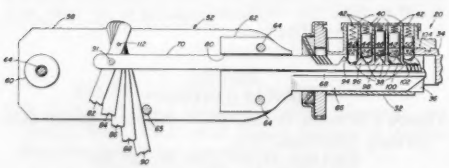
A dodging course calculator having a pair of circular plates coaxially mounted for relative rotation with one plate having an azimuth scale and the other plate having a diametral line with means for providing a second line perpendicular to the diametral line and movable relative thereto.

3,827,151

DECODING INSTRUMENT FOR A PIN-TYPE TUMBLER LOCK

David W. Naill, 1498 Meadow Dr., El Cajon, Calif. 92021

Filed May 12, 1971, Ser. No. 142,483
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 F **5 Claims**



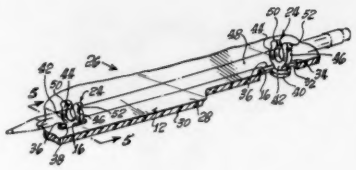
A decoding instrument for a pin-type tumbler lock, the instrument including a frame having a decoder support for a plurality of shim-like, toothed decoders, the combined thickness of the support and decoders being less than the width of the key-receiving slot in the barrel of a lock. These decoders are shiftable independently of one another and longitudinally of the support to detect the individual movement of the pins.

3,827,152

MEANS FOR ATTACHING PENCILS TO TEMPLATES

Clifford P. Dailey, 6275 Halstead, Alta Loma, Calif. 91701

Filed June 11, 1973, Ser. No. 368,600
Int. Cl. B43k *31/00*
U.S. Cl. 33—174 B **4 Claims**



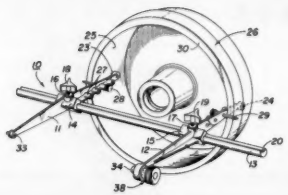
A plastic clip of generally lyrate configuration has a pair of arms upstanding from a neck portion which overlies the base of the clip. An instrument to receive the clip has a T-shaped cutout void for the clip base on the instrument underside, with the clip neck snugged between inwardly directed shoulder flanges of said instrument overlying the cutout. The resulting T-shaped void is somewhat elongate with the span between the shouldering flanges being substantially equal to the thickness of the arms for inserting the clip arms there through from the bottom side of the instrument.

3,827,153

BRAKE SHOE GAGE

Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Sept. 15, 1972, Ser. No. 289,401
Int. Cl. E21b *47/08*
U.S. Cl. 33—178 R **4 Claims**



A gage and method for presetting brake shoe assemblies to provide an adjustable, precise clearance between the brake shoes and brake drum upon assembly thereof.

3,827,154

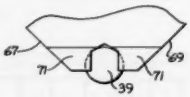
THREAD INSERTS AND GAGE UTILIZING SAME

Cass Kaifesh, 9947 Corella, Whittier, Calif. 90603

Filed Dec. 9, 1971, Ser. No. 206,412
Int. Cl. G01b *5/12, 5/16*
U.S. Cl. 33—199 R **5 Claims**

An attachment for a gage which allows the gage to accurately measure the pitch diameter of threads comprising first, second and third thread contacting elements attached to the gage. The three elements are spaced from each other and define a plane. The gage is positionable relative to the threads

so that the plane extends generally axially of the threads. At least two of the elements are mounted for limited movement



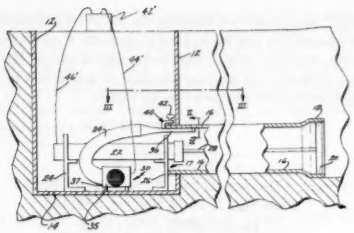
generally parallel to the axis of the threads and each of the elements is sized to be positionable in a groove between adjacent threads and in contact with such threads.

3,827,155

METHOD AND APPARATUS FOR LAYING A PIPLINE

Ramon Menzel, Stow, Mass., assignor to Laser Alignment, Inc., Grand Rapids, Mich.

Filed July 27, 1972, Ser. No. 275,687
Int. Cl. G01b *11/27*
U.S. Cl. 33—228 **14 Claims**



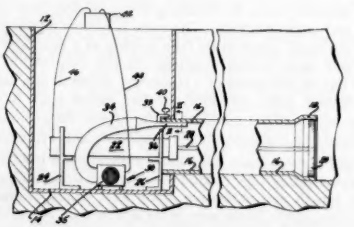
This disclosure describes a method and apparatus for laying a pipeline in which the pipes are aligned along a preselected path with a collimated light beam, preferably according to the methods of U.S. Pat. Nos. 3,116,557 and 3,279,070. Air is forced through the pipeline in a helical spiral to prevent gases from building up within the pipeline as the pipes are being laid. A blower unit coupled to an outlet nozzle having a clamp for clamping the nozzle to the pipe at an angle to the longitudinal axis of the pipe is provided for this purpose.

3,827,156

METHOD AND APPARATUS FOR LAYING A PIPELINE

Roger J. Roodvoets, and Merlin J. Applegate, both of Grand Rapids, Mich., assignors to Laser Alignment, Inc., by said Roodvoets and Alignment Systems, Inc., both of Grand Rapids, Mich., by said Applegate

Filed Sept. 30, 1968, Ser. No. 763,786
Int. Cl. G01b *11/27*
U.S. Cl. 33—228 **11 Claims**



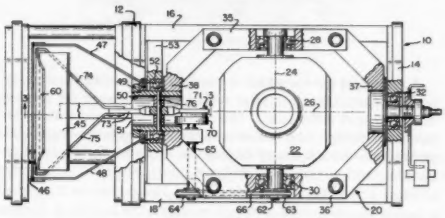
This disclosure relates to a method and apparatus for laying a pipeline in which the pipes are aligned along a preselected path with a collimated light beam, preferably according to the method of U.S. Pat. No. 3,116,557. Air is blown through the pipeline to prevent gases from building up within the pipeline as the pipes are being laid. A blower unit with a flexible conduit is provided for this purpose.

3,827,157

ARTIFICIAL-HORIZON GYROSCOPE

Frederick J. Owens, Hopatcong, N.J., assignor to Aerosonic Corporation, Clearwater, Fla.

Filed June 16, 1972, Ser. No. 263,696
Int. Cl. G01c *19/44*
U.S. Cl. 33—329 **3 Claims**



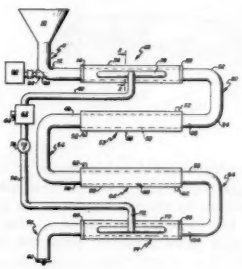
In an artificial horizon gyroscope, pitch information is transmitted from the gyro rotor pitch axis by means of a belt-and-pulley arrangement and a pin-and-slot connection to the display or indicating dial. A drive wheel carries the pin which engageably rides in the slot in a pitch arm extending through a pivot axis member to the indicating dial.

3,827,158

SYSTEM FOR TREATING SOLID MATERIAL

Roy C. Bradshaw, Lousville, Ky., and Gus H. Hicks, P.O. Box 16161, Louisville, Ky. 40216, assignors to said Hicks, by said Bradshaw

Filed Aug. 29, 1972, Ser. No. 284,480
Int. Cl. F26b *11/12*
U.S. Cl. 34—182 **9 Claims**

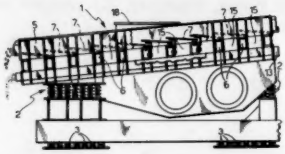


A system for treating solid material by applying gas to and extracting the gas from the solid material while the solid material is being conveyed. The system includes a gas entrance conduit to which the gas is conveyed and a gas exit conduit from which the gas is drawn while the solid material is being conveyed through the conduits and through piping located on the entrance end of the gas entrance conduit, the exit end of the gas exit conduit and intermediate piping extending between the conduits.

3,827,159
PARTICULATE MATERIAL CONVEYOR

Michele Venanzetti, Milan, Italy, assignor to Venanzetti Vibrazioni S.p.A., Milan, Italy

Filed Feb. 26, 1973, Ser. No. 335,806
Claims priority, application Italy, Aug. 4, 1972, 69559/72
Int. Cl. F26b 11/18
U.S. Cl. 34—164 1 Claim

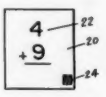


A conveyor device which is particularly suitable for conveying hot particulate material such as agglomerate for feeding blast furnaces is disclosed. The conveyor is formed with a construction using only bolted connections which nevertheless permits all the necessary degrees of freedom for thermal expansion and contraction without being subject to excessive stresses which might cause fractures. The conveyor comprises a shaker frame having a trough in which the bottom is formed of a plurality of plates in a stepwise array, one end of the shaker frame being higher than the other. The transverse edge of each plate is secured to a respective supporting cross piece and the opposite edge is carried by at least one cranked bracket mounted on the next lower cross piece to which one edge of the adjacent plate is mounted. This arrangement forms a number of openings in the bottom of the trough, and through these openings air can be passed from below to cool the material being conveyed and the plates of the conveyor.

3,827,160
EDUCATIONAL DEVICE

William Carl Talbot, 65 Washington Ave., Bernardsville, N.J. 07924, and Cornelius Lindsey, 6041 Capri Dr., Cincinnati, Ohio 45224

Filed May 14, 1973, Ser. No. 359,715
Int. Cl. G09b 1/30
U.S. Cl. 35—9 R 8 Claims



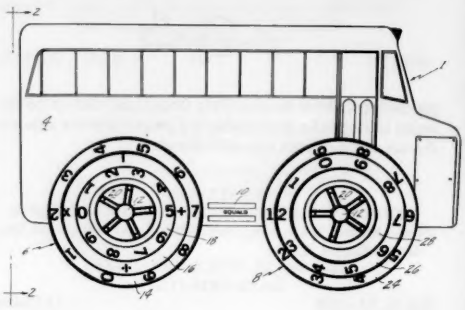
A device which helps slow learners to become informed and improve manual dexterity. A student indicates answers to a series of questions by placing blocks at the proper place on a board, the blocks being decorated so that when all of the questions have been properly answered an image will be completed.

3,827,161
EDUCATIONAL MATHEMATICAL DEVICE

Edwin G. Nelson, West Palm Beach, Fla., assignor to John Madison Harris and Jack N. McCarthy, a part interest to each

Filed June 20, 1973, Ser. No. 371,891
Int. Cl. G09b 1/22, 19/02
U.S. Cl. 35—31 A 8 Claims

A mathematical device for teaching a person the fundamentals of arithmetic is shown having a body shaped as a vehicle with two wheel assemblies representing the front and back wheels of the vehicle with an equals sign therebetween. The rear or left wheel assembly provides the "problem" side and the front or right wheel assembly provides the "answer" side.

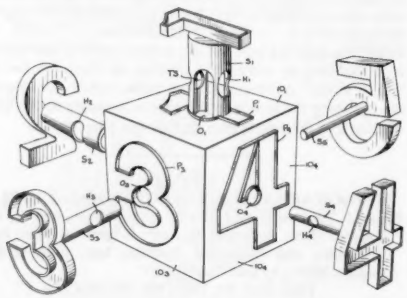


A modification is shown wherein the numbers and signs on the wheel assemblies can be lighted to provide a clearer contrast in viewing the device and also to provide a means for the instructor to notify the student whether or not he has arrived at the right answer for the problem set forth.

3,827,162
COUNTING CUBE

Alan Moeser, 4 Homestead Ln., Roosevelt, N.J. 08555

Filed July 2, 1973, Ser. No. 375,365
Int. Cl. G09b 1/10, 19/02
U.S. Cl. 35—32 6 Claims

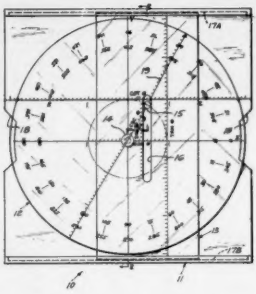


A counting cube for teaching pre-schoolers how to recognize and count numbers. The cube is hollow and is provided with six faces, the bottom face serving as a base and the top and side faces having openings therein lying within sockets each having the shape of a respective numeral in a sequential set thereof. Also, provided are five pieces each having the shape of one of the numbers in the set and dimensioned to be received in a correspondingly-shaped socket. Projecting from the rear of each piece is a hollow stem which is insertable into the cube through the related opening, the stems all having the same length and extending along axes which intersect at a common point. Transverse holes are formed in the first four stems in the sequence to define cross-through passages for the intersecting stems whereby only when the pieces are socketed in direct sequence is it possible to mount all pieces on the cube.

3,827,163
TRIGONOMETRY TEACHING DEVICE

Alton C. Grimes, Mississippi State, State College, Miss. 39762

Filed May 24, 1973, Ser. No. 363,556
Int. Cl. G09b 23/04
U.S. Cl. 35—34 5 Claims



A device for visualizing functions and their variations, the value of each function and the demonstration of fundamental identities and equations of condition comprises a platform, a rotatable transparent disc and a transparent slide member. The slide member moves linearly in response to disc rotation. Circular and linear scales imprinted on the three parts cooperate in the teaching method.

3,827,164
AN EDUCATIONAL DEVICE

Gloria M. Hale, 16282 Main St. Apt. 3, Tustin, Calif. 92680

Filed Feb. 9, 1973, Ser. No. 331,229
Int. Cl. G09b 11/04; B43l 1/12
U.S. Cl. 35—37 4 Claims

An educational device that includes first, second and third sheets connected at the edges thereof, and which is particularly adapted for use by a small child. The first sheet supports a layer of colored wax that is overlaid by the second sheet. The second sheet is adapted to have portions thereof forced into adhering contact with the wax layer when a stylus is moved thereover. The second sheet is preferably translucent, and the third sheet transparent.

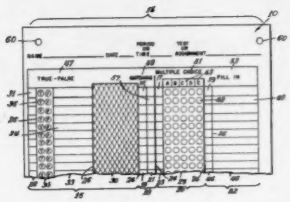
Insignia-defining means are preferably removably mounted on the third sheet, and define areas therebetween on which a user may move a stylus in an attempt to reproduce the insignia. However, if desired, the insignia may be made a permanent part of either the second or third sheets.

As an alternate structure, a fourth transparent sheet may be interposed between the second and third sheets, with the fourth sheet providing an area on which the user may draw with the stylus when the third sheet is peeled back. The wax layer and second sheet cooperate to visually record the path of the stylus, irrespective of whether the latter is moved in pressure contact with the third or fourth sheet. The reproduced insignia on the second sheet is easily removed therefrom by peeling it away from the wax layer.

3,827,165
TEST SCORING APPARATUS

Robert Jacobson, 725 W. Brompton, Chicago, Ill. 60657

Filed June 21, 1973, Ser. No. 372,009
Int. Cl. G09b 3/00
U.S. Cl. 35—48 A 5 Claims

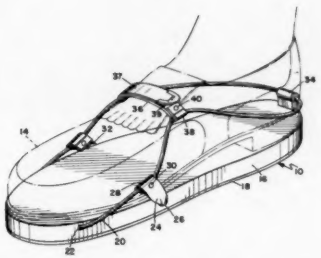


A test scoring apparatus embodying a printed student's answer sheet and a printed teacher's template forming blank. The answer sheet, when properly pencil-marked by the student in response to a questionnaire, and the template blank, when similarly pencil-marked by the teacher and provided with sight holes and sight windows in response to the same questionnaire, constitute counterpart members which, when superimposed, enable the teacher to make both side-by-side comparisons for grading fill-in type questions, and sight hole disclosures for grading true-false and multiple choice type questions.

3,827,166
DETACHABLE SPIKED SHOE PROTECTIVE COVER

Mallard S. Goodman, 401 E. 17th Ave., Escondido, Calif. 92025

Filed Dec. 26, 1973, Ser. No. 427,557
Int. Cl. A43b
U.S. Cl. 36—2.5 AN 9 Claims

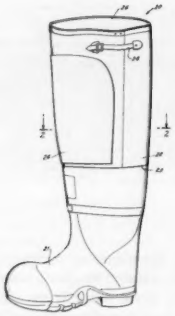


A spiked shoe protective cover having a pad of deformable material shaped to conform to the sole and heel of a spiked shoe and having a resilient strap, extending from each side of the front of the pad rearwardly in a continuous loop around the heel of the shoe with central and rear flexible straps connecting the resilient strap to the pad with a space therebetween, and a central connecting strap that quickly and easily interconnects the sides of the resilient strap to resiliently hold the pad against the shoe sole with the deformable material absorbing the spike or cleat projections from the bottom of the shoe with the pad abutting against a substantial portion of the bottom surface of the shoe providing maximum support.

3,827,167
SAFETY BOOT

James P. Jones, Binghamton, N.Y., assignor to Endicott Johnson Corporation, Endicott, N.Y.

Filed June 1, 1973, Ser. No. 366,048
Int. Cl. A43b *1/10*
U.S. Cl. 36—4 9 Claims

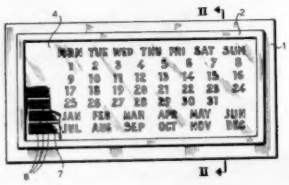


A safety boot for the protection of the wearer from fire and the like. The boot includes a foot portion and a leg cover portion extending upwardly therefrom. The boot has an inner lining surface and an outer exposed surface. A safety shield is on the leg cover portion of the boot and is positioned so as to provide additional fire protection to a specific predetermined portion of the leg of the wearer.

3,827,168
PERPETUAL CALENDAR, OPERATED BY A MAGNET

Gian Luigi Mori, Via Maria Cristina 56, Pino Torinese (Turin), Italy

Filed Apr. 9, 1973, Ser. No. 349,439
Claims priority, application Italy, Apr. 7, 1972, 68062/72
Int. Cl. G09d *3/00*
U.S. Cl. 40—110 5 Claims

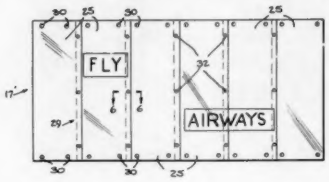


A perpetual calendar operated by a magnet comprises at least a rectangular plane support member, provided on one face with ribs parallel with its edges and defining a seat for an opaque sheet which bears, in transparent characters and on several horizontal rows, the indications relating to the names of the days of the week, the days of the months, and the names of the months. The portion of the said support member covered by the opaque sheet has as many grooves as the rows of indications, and in every groove is placed a magnetized plate the surface of the magnetized plate facing the sheet is coloured and the magnetized plate may be moved along the groove by means of a magnet for displaying by means of the coloured face the elements constituting a date.

3,827,169
STATIONARY BACKLIGHTED BILLBOARD, BILLBOARD DISPLAY PANEL AND METHOD OF MAKING A BILLBOARD DISPLAY PANEL

Bernard S. Chase, 17 Kane St. Lindenhurst, Babylon, L. I., N.Y. 41703; Raymond H. Frederick, 17 North Ave., Montvale, 07645, and Victor T. Gorglione, 40 Louis St., Old Bridge, N.J. 08857

Division of Ser. No. 172,618, Aug. 8, 1971, Pat. No. 3,768,186. This application Mar. 30, 1973, Ser. No. 346,699
Int. Cl. G09f *7/00*
U.S. Cl. 40—125 K 7 Claims

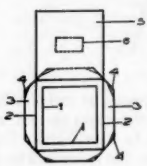


A backlighted stationary billboard is disclosed which includes a lamp chamber closed at its front by a novel display panel so that lamps within the lamp chamber may illuminate the display panel from behind. The novel billboard display panel includes a unitary fiber glass and polyester resin panel having a display sheet embedded therein with the display indicia applied to the display sheet. A novel process of making the novel display panel is disclosed in which paper is printed with the desired billboard indicia, the printed paper is arranged adjacent layers of fiber glass, and the fiber glass and paper are impregnated with the polyester resin and embedded therein, after which the resin is cured to produce a unitary semi-rigid billboard panel.

3,827,170
MOSAIC COMPOSITE SHEET COMPOSED OF A NEW TYPE OF GREETING CARDS

Dicksen T. W. Lau, 450 17th Ave., San Francisco, Calif. 94121

Continuation of Ser. No. 885,893, Dec. 17, 1969. This application Jan. 22, 1973, Ser. No. 325,821
Int. Cl. G09f *1/04*
U.S. Cl. 40—158 R 1 Claim



Mosaic composite sheet composed of a new type of greeting cards which are manufactured from tough, pliable fabric and have flaps thereon coated with adhesive on the inward faces. The mosaic composite sheet which is created by interconnecting type of greeting cards by means of the flaps can be used as table-cloth, drapery, bedspread, item of clothing or the like.

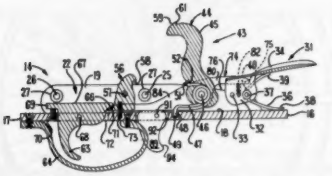
3,827,171
LOCK FOR TRAP TYPE SHOT GUNS

Carl G. Smith, 23777 Hiway 49, Auburn, Calif. 95630

Filed Feb. 5, 1973, Ser. No. 329,850
Int. Cl. F41c *19/00, 17/00*
U.S. Cl. 42—69 B 5 Claims

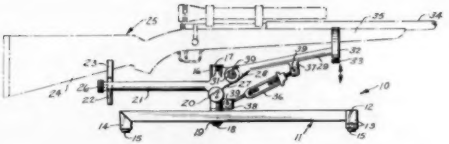
Inserted into the receiving chamber of the lock (i.e., trigger, sear and hammer) of a trap type shotgun is an elongated U-

shape housing having on the forward end a spring supported loading platform adapted to receive and temporarily carry a shotgun shell inserted through the uncovered ejection port when the breech bolt is retracted rearwardly into open position. Rearward movement of the bolt is simultaneously effective to engage and depress a spring-biased hammer pivotally mounted on the housing, the hammer including a notch for engagement with the latch hook of a sear rockably mounted on



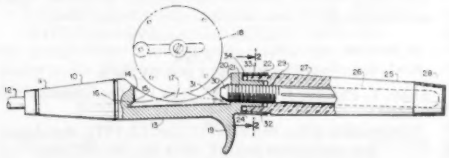
the housing. A spring-urged trigger has a portion overlying a flange on the sear so that actuation of the trigger moves the sear latch hook out of engagement with the hammer, thereby allowing the hammer to spring forwardly and strike the firing pin. A safety lever positively immobilizes the trigger in open bolt position and, for automatic shotguns, a bolt detent structure holds the bolt open after each shot until a shell is inserted and a separate trip lever is actuated so as to allow the bolt to close.

3,827,172
BENCH REST DEVICE FOR FIREARMS
Everett Howe, Rt. 2, Box 42, Holmen, Wis. 54636
Filed Nov. 28, 1972, Ser. No. 309,983
Int. Cl. F41c *29/00*
U.S. Cl. 42—94 **4 Claims**



An adjustable support device for firearms, which includes primarily, a three point base with shaft within a sleeve which carries the main body of the device, the device having turnbuckle means for adjusting the forward member.

3,827,173
FISHING ROD HANDLE
Richard D. Barnes, Costa Mesa, Calif., assignor to The Conolon Corporation, Santa Ana, Calif.
Filed Mar. 20, 1973, Ser. No. 343,161
Int. Cl. A01k *87/00*
U.S. Cl. 43—23 **7 Claims**

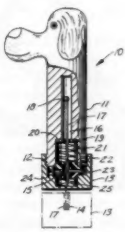


A fishing rod handle to which is attached a reel with a foot has a base with a forward lip to receive the front of the reel foot. The rear of the base contains a longitudinal threaded aperture through which a threaded forward projection of a hand grip is turned to extend over and secure the rear of the reel foot. A tubular shield attached to the base extends rearwardly over the front of the hand grip to cover any clearance between the front of the hand grip and the rear of the base.

3,827,174
FISH-RELEASING FISH HOOK
Louis C. Banker, 186 First St., Britt, Iowa 50423
Filed Apr. 9, 1973, Ser. No. 349,266
Int. Cl. A01k *83/00*
U.S. Cl. 43—43.16 **6 Claims**

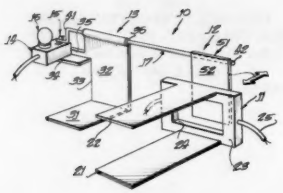
A fish-releasing fish hook assembly comprising a fishing line, a hook shank having an eye at one end to which the line is attached, and an arcuate member pivotally secured to a curved portion at the other end of the shank. The pivoted member has a point at one end of one of its sides and a holding portion on the other of its sides. A spring-biased sleeve is mounted on the shank to engage the holding portion and movement of the sleeve by separate line means releases the pivoted member so that it can tip into a position for releasing a fish after it has been caught.

3,827,175
FISHING BOBBER
William E. Howard, 850 Stadelman Ave., Akron, Ohio 44320
Filed Aug. 11, 1972, Ser. No. 280,076
Int. Cl. A01k *91/00*
U.S. Cl. 43—44.95 **3 Claims**



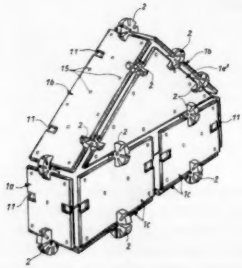
A fishing float device for attachment to a fishing line. This device consists primarily of an animated body having spring means, wire means, rubber plug means and a cap member frictionally securing the device to a fishing line.

3,827,176
ELECTRONIC EXECUTING DEVICE FOR MOLES, GOPHERS AND THE LIKE
Homer A. Stirewalt, 1016 Maple Dr., Windsor, Calif. 95492
Filed Oct. 23, 1973, Ser. No. 408,385
Int. Cl. A01m *19/00*
U.S. Cl. 43—98 **8 Claims**



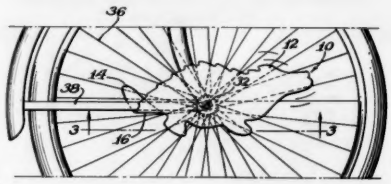
An electronic executing device intended for the electrical execution of moles, gophers and the like including a pair of high voltage grids spaced on opposite sides of a windowed aperture having a swinging door associated therewith and operatively connected to an electrical switch, the door adapted to activate the switch upon swinging movement of the door upon activation by the mole, gopher, or the like to electrically energize the grids for a timed cycle of operation to electrocute the mole contacting the grids. A modified alternative provides for a reciprocally slidable door rather than a swinging door to activate the electrical switch to energize the grids.

3,827,177
CONSTRUCTION GAME
Gunter Wengel, Altbach, Germany, assignor to Memory-Plastic Gunter Wengel, Altbach, Germany
Filed Jan. 22, 1973, Ser. No. 325,827
Claims priority, application Germany, Jan. 24, 1972, 2203152
Int. Cl. A63h *33/10*
U.S. Cl. 46—31 **7 Claims**



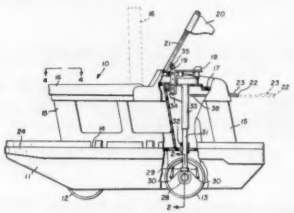
A set of toy construction elements consisting of flat triangular and rectangular plates and circular connectors. Multiple radial slots in the somewhat resilient connectors are dimensioned to receive and retain reduced web sections in the edges of the plates so that doll houses and other structures can quickly be assembled.

3,827,178
DEVICE FOR ATTACHMENT TO THE WHEEL OF A BICYCLE
Richard J. Warneke, 915 W. Miner St., Arlington Heights, Ill. 60005
Filed Nov. 21, 1973, Ser. No. 417,952
Int. Cl. A63h *5/00*
U.S. Cl. 46—191 **5 Claims**



A device for attachment to the end of the shaft which extends through the axle of a bicycle wheel. The device has a spoke-engaging portion which successively makes contact with the spokes of the bicycle wheel as it revolves thereby creating a noise while at the same time imparting an animated-like action to the device.

3,827,179
WHEELED TOY VEHICLE WITH CAM OPERATED OSCILLATING CHAIR AND STEERING WHEEL
Victor C. Reiling, Jr., East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 6, 1972, Ser. No. 312,683
Int. Cl. A63h *17/25*
U.S. Cl. 46—204 **12 Claims**

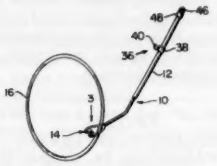


A toy boat has a hull with wheels, a simulated steering wheel and a simulated operator's chair. One of the wheels has a cam surface that moves reciprocally as the wheel rotates, and a cam follower engages the cam surface so as to oscillate an upright stem around its axis in response to wheel rotation. The operator's chair is mounted on the upright stem to oscillate therewith, and the steering wheel is preferably engaged by a projection from the chair for oscillating the steering wheel with the chair. The boat has an upper deck piece which is apertured and can be pivoted up to serve as a carrying handle. A retractable diving board and a pennant mounted on a tight coil spring may be mounted on the boat. Accessory figures and furnishings for use with the boat may be provided.

3,827,180
HOOP PROPELLING DEVICE
James T. Phillips, Jr., 4336 W. 59th Pl., Los Angeles, Calif. 90043
Continuation of Ser. No. 218,777, Jan. 18, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,463
Int. Cl. A63h *33/02*
U.S. Cl. 46—220 **4 Claims**

Hoop propelling trundle comprising a handle with a normally closed loop on one end thereof having relatively

spreadable resilient legs for forming an opening through which a hoop may be passed to secure it to or detach it from the loop. A bight is provided for engaging the hoop for propelling it and another bight or hook is provided for arresting its rolling



motion. In one species, the two bights lie in the same plane and in another species they lie in angularly related planes. A slidable clip on the handle secures the hoop thereto with the handle disposed substantially in the plane of the hoop.

3,827,181

ELECTRICALLY DRIVEN MODEL AIRPLANE

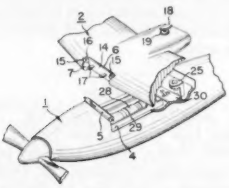
Kenichi Mabuchi, Tokyo, Japan, assignor to Mabuchi Motor Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,748

Claims priority, application Japan, Mar. 23, 1972, 47-28567; Mar. 24, 1972, 47-34019[U]

Int. Cl. A63h *33/26*

U.S. Cl. 46—243 AV **11 Claims**



An electrically driven model airplane is disclosed in which a battery cassette holder is provided in an opening formed in the fuselage of the model airplane, and a battery cassette is removably held in said cassette holder by means of movable terminals attached to said cassette holder.

3,827,182

DEVICE FOR AUTOMATIC OPENING, RESPECTIVELY CLOSING OF A CURVED SLIDING DOOR OR SIMILAR WITH REGARD TO A CONCENTRIC OPENING

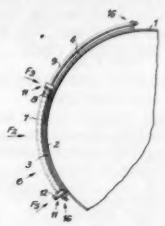
Roger Joseph Victor Van Helleputte, Gentbrugge, Belgium, assignor to Em. D'Hooge N.V., naamloze vennootschap, Ledeberg, Belgium

Filed Sept. 5, 1972, Ser. No. 286,054

Int. Cl. E04b *3/34*

U.S. Cl. 49—40 **2 Claims**

The invention pertains to a device for automatically opening and closing a curved sliding door with respect to a concentric opening in a fixed curved section, for instance a drum of a machine for washing linen, wherein at least one pressure cylinder is fitted between said sliding door and said fixed curved section, the cylinder itself and its piston rod being con-



centrically disposed, both with regard to said sliding door and with regard to said fixed section.

3,827,183

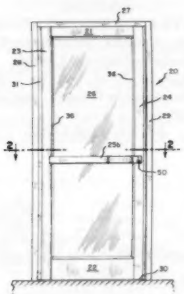
DOOR ASSEMBLY

Bryant S. Zimmerman, Chamblee, and Bob W. Larsen, East Point, both of Ga., assignors to The Anaconda Company, New York, N.Y.

Filed June 6, 1973, Ser. No. 367,572

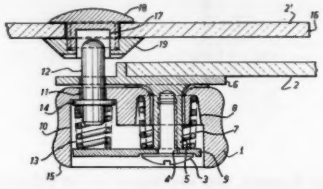
Int. Cl. E05d *11/00*

U.S. Cl. 49—383 **4 Claims**



An improved center-hung pivot door assembly comprises a door pivotally mounted within a door frame having a narrow jamb projection member attached to the pivot jamb of the door frame along substantially the entire length thereof and projecting outwardly from said pivot jamb into the door frame opening, an arcuate-shaped pivot stile mounted in closely spaced relation with said jamb projection, and resilient weather seal means attached either to said pivot stile or jamb projection and spanning the space between said pivot jamb and said pivot stile at least when the door is in a closed position. Preferably the surface of said jamb projection facing the pivot stile has a generally concave shape concentric with the arcuate-shaped pivot stile. The space between said projection and the pivot stile is always less than the thickness of human fingers, and the projection is sufficiently narrow so that such close spacing does not prevent mounting the door in or dismounting it from the pivot means while the projection remains attached to the pivot jamb.

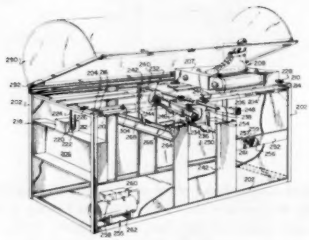
3,827,184
SLIDING GLASS LOCKS
Jean-Claude Pennec, and Michel Marcel Valacon, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France
Filed Oct. 12, 1972, Ser. No. 296,850
Claims priority, application France, Nov. 8, 1971, 71.39954
Int. Cl. E05d 13/04
U.S. Cl. 49—449 3 Claims



Device for locking and operating sliding glasses, notably in automative automotive and adapted to lock the glasses in their closed position.

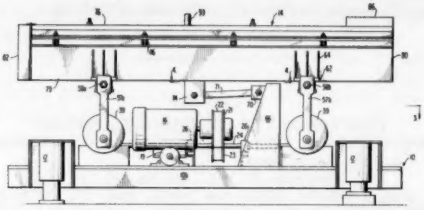
This device comprises a support secured to the inner glass and provided with an integral projection on which the lock body is adapted to slide, resilient means constantly urging said lock body against the glass, said lock body further comprising a recess adapted to receive a lock bolt constantly urged by a coil spring towards the outside of said recess so as to project from the inner glass, said lock bolt being adapted to engage a blind hole formed in the vicinity of the inner edge of the outer glass.

3,827,185
ICE SKATE SHARPENING APPARATUS
Jack Smith, Ontario, Canada, assignor to Eddy Match Company, Limited, Toronto, Ontario, Canada
Filed July 26, 1972, Ser. No. 275,195
Claims priority, application Canada, July 29, 1971, 119430; July 7, 1972, 146623
Int. Cl. B24b 19/00
U.S. Cl. 51—5 2 Claims



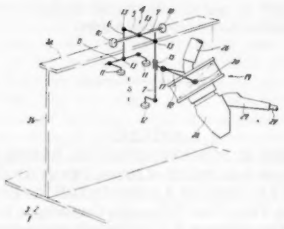
Apparatus for the sharpening of ice skates is disclosed. The apparatus consists of a carriage assembly having clamping means thereon for clamping a pair of skates to be sharpened. The carriage assembly is mounted for reciprocal longitudinal movement on a track carried by suitable framing and during forward and rearward movement of the carriage it passes over rotating grindstones which sharpen the skate blades. Each sharpening grindstone is independently pivotally mounted whereby the grindstones are lowered upon contact by the skate blades to follow the profile of the skate blade during forward movement of the carriage. The grindstones or grinding wheels may contact and further sharpen the skate blades during rearward movement of the carriage, or the grindstones may be lowered out of contact with the blades during rearward movement. Preferably the unit is provided with a cover to completely enclose the operating mechanism during operation for safety. The apparatus may be provided with a suitable microswitch which will not permit operation of the apparatus until the cover is completely closed. Uniform sharpening of skate blades is obtained as the blades travel over the sharpening grindstones at a uniform rate of speed and the pressure applied by the grindstone against the blades are constant throughout the sharpening operation.

3,827,186
DEFLASHING APPARATUS
Donald J. Ehnot, Coopersburg, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed May 30, 1972, Ser. No. 257,682
Int. Cl. B24b 1/00, 31/06
U.S. Cl. 51—7 24 Claims



Apparatus includes connecting rods which each pivot about a connection on a disc which is eccentric with respect to the axis of the shaft driving the disc to supply vertical reciprocatory motion. Particular ranges of amplitude, frequency and loading are utilized to cause impacting of articles against at least one surface and abrading against each other in the cryogenic deflashing of the articles.

3,827,187
ABRASIVE APPARATUS
Akira Yamamoto; Dan Yoshida, and Tatsumi Onaka, all of Minoru Shiraishi, Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Company, Ltd., Osaka, Japan
Filed Sept. 5, 1972, Ser. No. 286,042
Claims priority, application Japan, Sept. 6, 1971, 46-68765
Int. Cl. B24c 3/06
U.S. Cl. 51—9 7 Claims



Apparatus for abrasively cleaning surfaces, such as of a ship's hull block, including the surface of at least one member which serves as a rail on which a carriage is mounted, the carriage having supporting rollers engaging the upper surface of the rail and stabilizing rollers engaging opposite sides of the rail. An abrasive-slinging device is adjustably supported on the

carriage and is movable manually to direct abrasive as desired over the surfaces to be cleaned. Optionally, the carriage, or the abrasive-slinging device, or both of them may be power driven, and the carriage may be mounted on a pair of parallel members of a ship's hull block which serve as rails.

3,827,188

PORTABLE BLASTING DEVICE

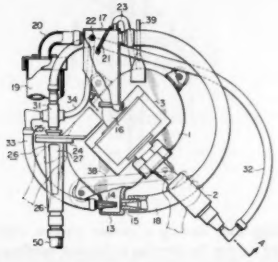
Toyozi Fuma; Hideo Takeuchi, and Susumu Ikeda, all of Toyokawa, Japan, assignors to Sintokogio, Ltd., Nakamura-ku, Nagoya, Aichi-ken, Japan

Filed May 8, 1973, Ser. No. 358,281

Claims priority, application Japan, May 11, 1972, 47-55295[U]; May 11, 1972, 47-55296[U]; July 27, 1972, 47-87947[U]; Mar. 2, 1973, 48-26544[U]

Int. Cl. B24c *3/06*

U.S. Cl. 51—9 **6 Claims**



A small-sized, light-weight and portable blasting device for centrifugally blasting abrasive materials such as shot or grit for grinding and cleaning the surface of large-sized workpieces such as pre-fabricated structures to be assembled into the hull of a ship.

3,827,189

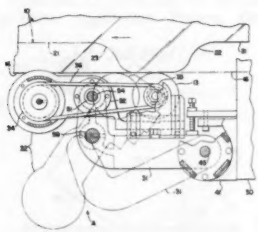
SHEET GLASS SEAMING MACHINE

Carle W. Highberg, Sylvania, and George R. Roesch, Sylvania Twp., both of Ohio, assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed Apr. 10, 1973, Ser. No. 349,741

Int. Cl. B24b *9/10*

U.S. Cl. 51—33 R **10 Claims**



A machine for grinding edges of cut-to-size sheets of glass and the like with an abrasive wheel, especially where the edge has an irregular contour such as with convex or concave curved portions. The wheel supporting mechanism and glass sheet are translated relative to one another in the plane of the sheet and the abrasive wheel is supported with its axis perpendicular to the sheet and in a manner to permit its movement toward and away from the edge of the sheet while continuously grinding so as to follow the edge contour. The abrasive wheel is urged selectively in an upstream direction when contacting a downstream facing edge portion (incurve) and in a downstream direction when contacting an upstream facing edge portion (outcurve), to prevent skipping and assure a uniform grinding pressure generally normal to the edge portion engaged by the wheel.

3,827,190

PIPE CUTTING MACHINE WITH SPARK ACTUATED FEED CONTROL

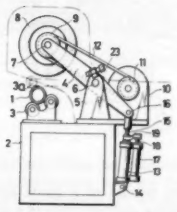
Shigeru Moriguchi; Mitsuo Tamura, both of Chiba, and Yuzi Saito, Kanagawa, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Claims priority, application Japan, May 30, 1972, 47-54204

Filed May 24, 1973, Ser. No. 363,503

Int. Cl. B24b *27/06*

U.S. Cl. 51—98 R **1 Claim**



Pipe cutting machine comprising a grinding wheel for cutting a pipe, means for detecting sparks from the grinding wheel or the pipe in cutting operation, and means for reducing the feeding speed of the grinding wheel, when said means is operated by sparks.

3,827,191

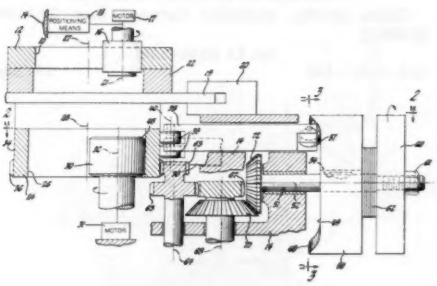
CAM CONTROLLED SURFACE FORMING MACHINE

Wilbur B. Crawford, Ann Arbor; Earl W. Young, Detroit, and Raymond Happy, Wayne, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 19, 1973, Ser. No. 371,496

Int. Cl. B24b *17/02, 7/00, 9/00*

U.S. Cl. 51—101 R **3 Claims**



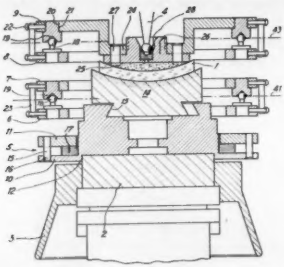
A surface forming machine has a master cam having a first cam surface which corresponds to the contour to be formed and is frictionally engaged by a driver wheel and also having both a second cam surface and a gear track which are parallel to the first cam surface with the gear track geared to drive a rotary control cam arrangement that controls a pair of cam guides that operate against the second cam surface to orient the cam relative to the driver wheel and thereby maintain a rotary tool axis in the plane normal to the tangent to the surface to be formed at the contact of the tool with the workpiece.

3,827,192

LENS GUIDE ARRANGEMENT AND APPARATUS FOR GRINDING AND POLISHING TORIC LENSES

Jan Ferrand, Puteaux, France, assignor to Societe C.M.V., Puteaux, France

Filed June 20, 1972, Ser. No. 264,647
Claims priority, application France, June 21, 1971, 71.22417
Int. Cl. B24b *13/02*
U.S. Cl. 51—124 L 10 Claims



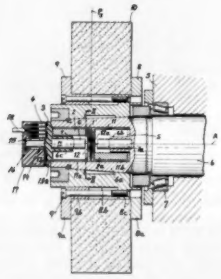
The invention relates to a guide arrangement for an apparatus for grinding and polishing of a toric lens. A tool is used which is guided in an arrangement comprising a stack of elements including intermediate and end elements each element being articulated on the adjacent element or elements, the articulation or joint axes of an element with the element above or the element below being perpendicular. The joints are of a type of which the wear only causes the elements to be brought closer together in the axis of the stack. The invention is applicable both to machines having a rotating turntable and to machines having a fixed plate.

3,827,193

SYSTEM FOR BALANCING ROTARY BODIES

Werner Liebmann, Dortmund-Applerbeck, and Lothar Kuhrau, Troisdorf-Friedrich-Wilhelms-Hutte, both of Germany, assignors to Schneider Maschinenbau GmbH, Siegburg, Rheinland, Germany

Filed Sept. 15, 1972, Ser. No. 289,290
Claims priority, application Germany, Sept. 30, 1971, 2148832
Int. Cl. B24b *45/00*
U.S. Cl. 51—169 13 Claims



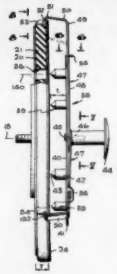
A system for balancing rotary bodies, such as a grinding wheel, comprises a pair of semi-cylindrical segmental balancing weights of segmental configuration individually rotatable about the axis of the rotatable body to be balanced by a respective electric motor. A brush and slipring arrangement is provided for enabling the individual reduction-gear motors to be operated while the body is rotated.

3,827,194

PIERCING OF SUCTION HOLES IN SANDING DISCS

Alma A. Hutchins, 49 N. Lotus, Pasadena, Calif.

Filed Aug. 21, 1972, Ser. No. 282,348The portion of the term of this patent subsequent to Jan. 29, 1990, has been disclaimed.
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 MT 12 Claims



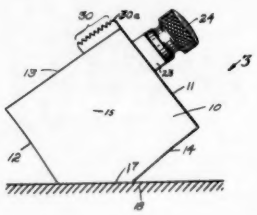
A sanding tool having a power driven circular backing structure or carrier for driving a circular sanding disc, with the backing structure containing openings through which air and abraded particles can be drawn by suction from a work surface to a collection location, and with a piercing tool being provided and adapted to be positioned opposite the backing structure in a predetermined located relation with respect thereto and to pierce apertures in the sanding disc communicating with the openings in the backing structure.

3,827,195

FIXTURE FOR SHARPENING THREAD CHASERS

Samuel Kirzner, Brookline, Mass., assignor to W. H. Byron, Inc., Woburn, Mass.

Filed Aug. 7, 1972, Ser. No. 278,441
Int. Cl. B24b *19/00*
U.S. Cl. 51—220 3 Claims



A fixture for sharpening thread chasers consisting of a block of seven-sided configuration and a latch secured by a thumbscrew. The block has a base surface which rest on the table of a grinder, and an inclined front surface. There are slanting grooves in the front surface, and locating pins in the grooves. The latch can be swung clear of the grooves to allow a chaser

to be inserted. One groove is intended for right hand chasers and the other for left hand chasers. When a chaser is positioned in the appropriate groove with its cutting tip facing upward, the face of the first tooth is parallel to the table so that it can be ground. By placing the same chaser in the other groove facing either upward or downward, and laying the block in its side, the hook of the chaser is presented in position to be ground.

3,827,196

MOBILE ROOM DIVIDING STRUCTURE

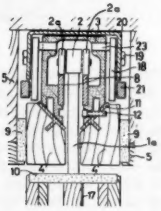
Ernst Voegeli, Zurich, Switzerland, assignor to Faltag AG, Altihausen (Thurgau), Switzerland

Filed Oct. 24, 1972, Ser. No. 300,380

Claims priority, application Switzerland, Oct. 23, 1971, 16679/71

Int. Cl. E04b *1/343*

U.S. Cl. 52—64 **20 Claims**



A room dividing structure wherein the lower end of a shiftable vertical partition has a projection extending into a guide groove of the floor and the upper end of the partition is connected with a runner movable along horizontal guide rails mounted on a vertically movable beam which is received in a groove of the ceiling. The beam carries two sealing strips and is movable by a motor or by a manually operated device, with and relative to the partition, between an uppermost position in which the bottom end face of the partition is lifted off the floor, an intermediate position in which the bottom end face of the partition rests on the floor, and a lowermost position in which it urges the sealing strips against the upper end face of the partition as well as against two panels which flank the groove in the ceiling.

3,827,197

MASTS FOR SUPPORTING PROJECTORS

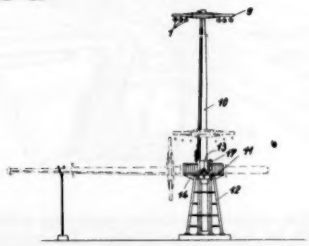
Marie Henri Hubert Adam, Bayon, France, assignor to Societe Anonyme L'Eclairage Technique, Nancy, France

Filed Oct. 13, 1972, Ser. No. 297,427

Claims priority, application France, Oct. 15, 1971, 71.37067

Int. Cl. E04h *12/18*

U.S. Cl. 52—29 **4 Claims**



A mast for supporting light or sound projectors, which can be retracted into a position of non-use by tilting the whole device and the projectors are mounted on a ring which can slide along the mast prior to the tilting of the latter.

3,827,198

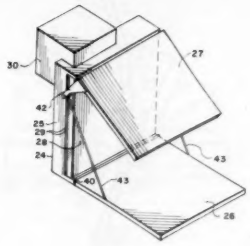
A FOLDABLE AND EXPANDABLE MODULAR SHELTER UNIT

Jerry L. Geihl, Dallas, Tex., assignor to M. J. Watson, Dallas, Tex.

Filed Aug. 25, 1972, Ser. No. 283,829

Int. Cl. E04b *1/344*

U.S. Cl. 52—69 **6 Claims**



There are disclosed two forms of foldable and expandable portable shelter modules having back or fixed wall units to which floor, roof and wall sections are hingedly or slidably attached to provide compact traveling packages and commodious shelters. The modules may be combined with each other and/or with trailers or automotive vehicles for use in a variety of applications.

3,827,199

PARTLY REVERSIBLE AUDITORIUM

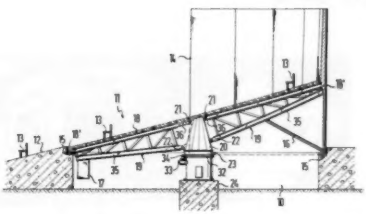
Hans Tax, Potsdamer strasse 3, Munich, Germany

Filed Nov. 28, 1972, Ser. No. 310,139

Claims priority, application Germany, Jan. 10, 1972, 2200963

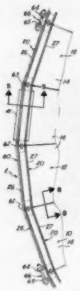
Int. Cl. E04h *3/12*

U.S. Cl. 52—10 **3 Claims**



A large auditorium is partly formed by a floor plate obliquely inclined relative to the horizontal and centrally mounted for rotation about a vertical axis on a base by means of a hub from which lattice girders radiate toward the periphery of the floor plate. Rows of seats on the floor plate face toward the lowermost part of the periphery while a wall approximately semicylindrical about the axis of rotation rises from the uppermost part of the floor plate periphery. The floor plate may be turned 180° into a position in which it is separated from the stationary remainder of the large auditorium by the semicylindrical wall and constitutes a smaller auditorium of its own.

3,827,200
POLYGONAL BUILDING STRUCTURE
Detvel Preissler, 915 26th St. N.W., Washington, D.C. 20037
Continuation-in-part of Ser. No. 107,055, Jan. 18, 1971, abandoned. This application Jan. 27, 1973, Ser. No. 325,132
Int. Cl. E04b 7/02
U.S. Cl. 52—82 1 Claim

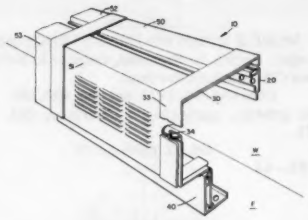


An improved building structure having a substantially polygonal shape which may be speedily assembled without the use of special tools is disclosed. The polygonal building has three basic structural components which are the floor panels, the wall panels and roof panels. The floor panels are triangular sections radially placed in a circle to form a disc. The wall panels are rectangular sections placed around the circumference to form a ring. The roof panels are triangular sections radially placed in a circle over the walls to form a cone. The panels interlock with one another by way of a novel tongue and groove arrangement and are banded together by way of unique rigid plates to form a strong integral structural unit. The building components may be prefabricated and the building may be speedily assembled at the preselected building site.

3,827,201
SKIRTING FOR BELOW DWELLING
Francis L. Struben, Whitehall, Md., assignor to Silver Top Manufacturing Company, Inc., White Marsh, Md.
Continuation of Ser. No. 60,326, Aug. 3, 1970, abandoned. This application Aug. 11, 1972, Ser. No. 270,814
Int. Cl. E04d 2/38
U.S. Cl. 52—169 5 Claims

An upper, generally U-shaped channel is formed from preshaped sections which are attached to the lower edge of vertical walls of a dwelling, such as a mobile home. A lower, generally U-shaped channel is secured to a surface, such as ground level, and is aligned with the upper channel so that the openings of the channels face each other. A plurality of preformed skirting panels are positioned between the spaced upper and lower channels with edge portions of the skirting panels located in the channels. The panels are fastened to the channels to provide a supported skirting for below a dwelling.

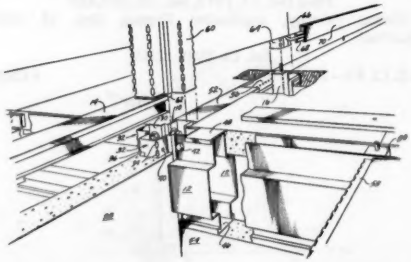
3,827,202
JOINT FOR ENCLOSURE, AND MOUNTING THEREFOR
Leonard R. Phillips, Westfield, Mass., assignor to Sterling Radiator Co., Inc., Westfield, Mass.
Filed Nov. 7, 1972, Ser. No. 304,495
Int. Cl. E04b 5/48; E04f 17/04
U.S. Cl. 52—220 12 Claims



A sheet metal enclosure for heating and ventilating equipment includes a plurality of panels, and means for joining them to one another, and for mounting these panels to a floor, ceiling or wall. The panel joining means comprises structural mullions located at the panel joints and these mullions also help to support the enclosure from a floor, ceiling or wall. Cover battens give the joint a finished appearance, and are releasably fastened to the mullions by spring clips. Thus, panels may be cut to any desired length and neatly installed on the job site.

The enclosure mounting means includes wall and floor, or ceiling support brackets to which the structural mullions are attached. The mullions are bolted to the floor support bracket by means of mounting plates incorporating vertical and oblique bolt slots respectively which slots are used in combination to anchor the structure at the desired height above the floor or below the ceiling.

3,827,203
PREFABRICATED BUILDING CONSTRUCTION
Robert W. Berrie, Yorba Linda, Calif., assignor to Omnico Systems International, Inc., Downey, Calif.
Continuation-in-part of Ser. No. 874,514, Nov. 6, 1969, Pat. No. 3,641,720. This application Feb. 15, 1972, Ser. No. 226,610
Int. Cl. E04c 2/48, 3/20
U.S. Cl. 52—236 11 Claims



A building construction system employing prefabricated components for high rise construction. The principal components of the system include edge socketed horizontal and vertical panels, two-way horizontal and vertical splines, and four-way vertical column splines. The panels interlock with the splines and column splines by means of complementary protrusions and recesses located in the sockets and spline cor-

ners, respectively. A typical floor is completed through erection of the vertical panels engaged in an interlocked relationship by the two-way vertical splines and the four-way vertical column splines, bolted attachment of wall caps, struts and floor beams to the column splines, and assembly of the horizontal panels engaged in an interlocked relationship by two-way horizontal splines which have bolted attachment to the floor beams. Thereafter reinforcing steel bars are placed within the column splines and concrete is poured into the hollow defined by the interior of the column splines.

3,827,204

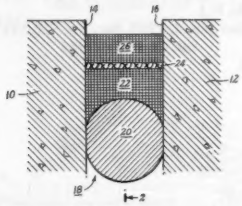
SEALED JOINT FOR SECTIONALIZED FLOORING AND METHOD OF MAKING THE SAME

Fred L. Walters, Levittown, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Mar. 14, 1972, Ser. No. 234,537

Int. Cl. E04f *15/14*

U.S. Cl. 52—396 **1 Claim**



A method of sealing a joint between adjacent structural elements of a sectionalized floor to provide a seal having improved penetration resistance. The seal is formed of a sealant based on a cured liquid polymer, preferably a liquid polysulfide polymer and has a layer of glass cloth embedded therein parallel to and somewhat below the upper surface of the seal. Both the method and the sealed joint are claimed.

3,827,205

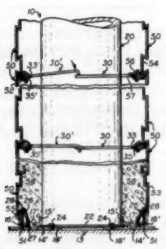
BUILDING WALL CONSTRUCTION

Edmund C. Barbera, 55 Hillandale Rd., Port Chester, N.Y. 10573

Filed Dec. 29, 1972, Ser. No. 319,295

Int. Cl. E04b *2/28, 2/30, 2/40*

U.S. Cl. 52—426 **8 Claims**



A building wall construction that includes a plurality of pairs of opposed panel elements mounted on opposed surfaces of a supporting structure. Connecting members are pivotally mounted on opposed panel elements that interengage upon pivoted movement toward each other, and wherein the interengaged connecting members are in gripping relation to surface portions of the supporting structure.

3,827,206

THREE DIMENSIONAL CONSTRUCTION

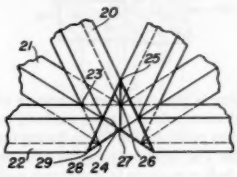
Pierre Nierle, 19 Ave. Eugene Lanse, 1212 Grand/Lancy Geneve, Switzerland

Filed Mar. 19, 1971, Ser. No. 125,996

Claims priority, application Switzerland, Mar. 20, 1970, 4224/70

Int. Cl. E04h *12/10*

U.S. Cl. 52—648 **6 Claims**



A three dimensional structure comprises a plurality of bars, the end parts of which have, in cross-section, the shape of an equal sided parallelogram two angles of which equal 70°32′. The end parts terminate with a shape defined by two plane surfaces intersecting along a shorter diagonal of said parallelogram, each plane surface making an angle of substantially 54°44′ with a plane through said shorter diagonal and cutting the end part in two, said shape consisting of a pair of equilateral triangles with said shorter diagonal as a common side. The geometrically shaped end parts of adjacent bars cooperate to define an angular array in which the bars can be fixed.

3,827,207

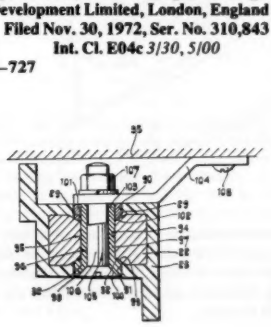
COMPOSITE FRAME MEMBER WITH BUSHED APERTURE

Herbert John Sharp, Greenford, and Victor William Stanley Humphrey, Radlett, both of England, assignors to ARO Plastics Development Limited, London, England

Filed Nov. 30, 1972, Ser. No. 310,843

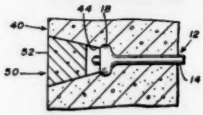
Int. Cl. E04c *3/30, 5/00*

U.S. Cl. 52—727 **4 Claims**



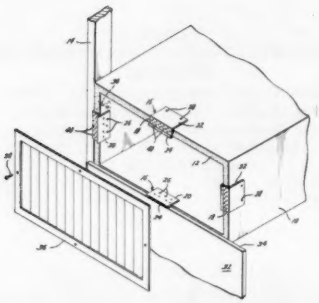
The specification discloses an aperture-defining frame member, e.g., a window frame, comprising a rigid, frame-shaped reinforcement embedded in a covering of synthetic resinous material. An aperture is provided through the reinforcement in alignment with bores in the covering and a bushing extends through said bores and said aperture, the bushing being in sealing engagement with said bores. The bushing may be used to receive a fastener to secure the frame member to another member and the bushing may be in two parts, a first part having a hollow shank with a collar at one end thereof and a second part arranged to engage the end of the shank remote from the collar.

3,827,208
FINISHING METHOD
James Madison Elliott, 3509 Matador, Garland, Tex. 75042
Filed June 19, 1972, Ser. No. 264,013
Int. Cl. E04g *23/02*
U.S. Cl. 52—741 **10 Claims**



A finishing plug is pre-cast from a mixture of Portland cement, sand, and water and is shaped similarly to plastic cones of the type used to position wall forms during the construction of concrete walls. The finishing plug has a flat end surface and is mounted in a hole remaining in a concrete wall following the removal of a plastic cone from the wall with the end surface of the plug flush with the wall surface. This is preferably accomplished by first coating the finishing plug with a liquid cementuous material and then inserting the plug into the hole. The finishing plug is shorter than the plastic cone so as to accommodate a tie rod portion which may project into the hole.

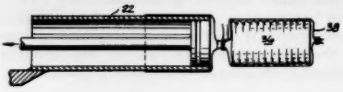
3,827,209
DUCT-GRILLE CONNECTION CLIP
James R. Hobbs, 5303 Glenmont, Houston, Tex. 77036
Filed May 19, 1971, Ser. No. 144,848
Int. Cl. A446 *21/00*
U.S. Cl. 52—760 **1 Claim**



A clip for attachment to a fiberglass, or similar ventilation duct, which provides a means for securing the duct to structural studs or plates, a ledge for use as a sheetrock or other wall covering abutment, and a perforated face for attachment of the grille to the duct.

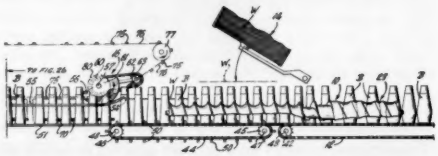
3,827,210
METHOD AND APPARATUS FOR PACKAGING FLEXIBLE DUCT
Rodney Roger Smalley, Maumee; John Vendel Staudinger, Curtice, both of Ohio; Harvell Morton Smith, Aurora, Colo., and Brian Lee Meeker, Toledo, Ohio, assignors to Johns-Manville Corporation, Arapahoe, Colo.
Filed Jan. 2, 1973, Ser. No. 320,396
Int. Cl. B65b *63/02*
U.S. Cl. 53—24 **8 Claims**

An axially collapsible duct is packaged by inserting the duct into an open end of a tube, placing an open end of a bag over a tube so that the bag encloses the open end of the tube, compressing the duct, ejecting the duct from the tube into the bag while the duct is compressed, closing the open end of the bag about the duct while the duct is compressed, and fastening the open end while it is closed to retain the duct within the bag in



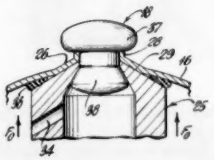
a compressed state. A negative pressure can be created within the tube as the duct is being collapsed and ejected into the bag to hold the bag about the open end of the tube and to prevent the duct from expanding within the bag.

3,827,211
PACKAGING MACHINE
James Zavatone, Englewood, and John H. Myers, Bergenfield, both of N.J., assignors to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Jan. 2, 1973, Ser. No. 320,312
Int. Cl. B65b *21/24*
U.S. Cl. 53—48 **16 Claims**



A packaging machine for enclosing in a cut and scored wraparound-type blank of foldable sheet material a group of bottles in single line arrangement, which bottles are characterized by a body configuration having a larger cross sectional dimension in one direction than in the direction transverse thereto, the machine comprising an infeed conveyor with associated, parallel screw members which orient the bottles so that the longer body dimension extends transversely of the path of advance of the bottles and spaces the bottles uniformly for advance beneath an overhead blank feeding mechanism to a mechanism for folding the blanks about the bottles and finally to a group forwarding conveyor which advances the bottle and folded blank assemblies through a mechanism for securing the ends of the blanks in tight engagement about the bottles.

3,827,212
TOOL FOR SEALING A PRESSURE-OPERATED DISPENSING CONTAINER
Robert S. Schultz, Old Greenwich, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.
Filed Nov. 10, 1972, Ser. No. 305,304
Int. Cl. B65b *31/04*
U.S. Cl. 53—88 **4 Claims**



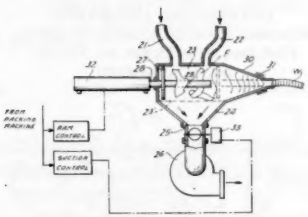
The invention contemplates a pressurized container, as for the containment of viscous product to be selectively

dispensed, and relying on an internal piston as the means of constantly loading the product for displacement in the direction of dispensing nozzle. The base of the container is closed by a resilient plug, jammed into a converging concave formation that is so configurated, in relation to a pressure-charging and plug-inserting tool, as to assure unerring closure without charge leakage, and at the same time to have the tool universally effective in performing its function for a wide range of container sizes.

3,827,213
APPARATUS FOR PACKAGING SYNTHETIC-RESIN SCRAPS

August Matzinger, Flums, Switzerland, assignor to Maschinenfabrik Flums AG, Flums, Switzerland

Filed Dec. 26, 1972, Ser. No. 318,162
Claims priority, application Sweden, Dec. 27, 1971, 19009/71; Oct. 31, 1972, 15834/72
Int. Cl. B65b *63/08*
U.S. Cl. 53—124 E **4 Claims**



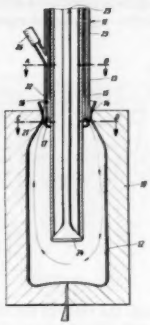
The synthetic-resin scraps produced by a packaging apparatus are fed into a compressing chamber having a funnel-shaped outlet end whose walls are heated to a temperature sufficient to fuse together those scraps coming into contact with this end. A ram reciprocal in this chamber is advanced toward this end when the input feed is stopped to compress a charge of the scraps against the outlet end, thereby forming a continuous sausage-like strand having an outer skin formed directly from the scraps and enclosing a compacted mass of the scraps.

3,827,214
BLOWING- AND FILLING THORN

Wilhelm Naumann, Baden, Germany, assignor to Firma PMD Entwicklungswerk fur Kunstoff-Maschinen GmbH & Co. K.G., Ettlingen/Baden, Germany

Filed Feb. 26, 1973, Ser. No. 335,740
Claims priority, application Germany, Feb. 25, 1972, 2208909
Int. Cl. B65d *47/08*
U.S. Cl. 53—191 **4 Claims**

A blowing- and filling-thorn for production of hollow bodies, in particular bottles, of thermoplastic synthetic material in a blowing process and for filling this hollow body, which comprises as a blowing tube mounted axially displaceable and having at least one blowing air channel. A filling tube is coaxially slidably mounted in the blowing tube, and has a filling valve in front of the mouth of its filling channel. At least one airing channel, is provided and the mouth of the blowing air channel and of the airing channel, in case the filling tube is moved into the blowing tube, is disposed diametrically opposite each other on a circular line comparatively narrowly surrounding a plate of a filling valve. The blowing tube is equipped with an annular deflection edge, overreaching the mouth of the blow air- and airing-channels on the outside, and

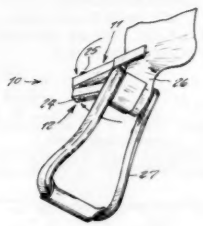


is bent at a distance thereto inwardly in the direction toward the filling tube up to its outer circular line, and has air passage openings.

3,827,215
HORSE SADDLE STIRRUP SETTER

Neal M. Edenfield, Rt. 1 Box 139, Grand Ridge, Fla. 32442

Filed Jan. 15, 1973, Ser. No. 323,708
Int. Cl. B68b *05/00*
U.S. Cl. 54—1 **1 Claim**



An accessory for assisting a rider in getting his foot into a stirrup when mounting a horse, the device consisting of a pair of straight handles positioned adjacent each other, one end of each handle having an opening therethrough for receiving a bolt fitted with a winged nut so that the handles can be forcibly brought toward each other, the opposite end of one of the handles having a pair of extending prongs and the other handle having at its opposite end a U-shaped collar, the prongs and the collar being adaptable to seize a portion of the harness so that the stirrup is maintained in a suitable position for receiving the rider's foot.

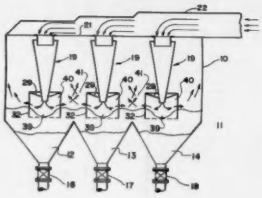
3,827,216
SCRUBBING APPARATUS AND METHOD

Ernest Mare, c/o Mr D. D. Melin, Krebs Engineers, 1205 Chrysler Dr., Menlo Park, Calif. 94025

Filed May 7, 1973, Ser. No. 357,673
Int. Cl. B01d *47/02*
U.S. Cl. 55—95 **5 Claims**

A method and apparatus for scrubbing gases with liquid. It employs at least one nozzle which discharges a stream of gas downwardly against the surface of a body of scrubbing liquid (e.g., water). The nozzle is made with converging flat side walls to provide an elongated discharge opening which extends horizontally over the body of scrubbing liquid. The

impingement of the discharging gas upon the liquid body serves to depress the surface of the liquid to form a trough-like region. Some scrubbing action is caused by such impingement, and the impingement causes some of the liquid to be entrained in the gas flow whereby a gas-liquid mixture flows in opposite



lateral directions from the sides of the trough-like region. The nozzle is provided with shield means whereby the movement of gas and entrained liquid from the trough-like region is confined. Preferably the method and apparatus makes use of a plurality of such nozzles disposed side by side.

3,827,217

ELECTROSTATIC PRECIPITATOR FOR THE COLLECTION OF PARTICLES CONTAINED IN A GAS

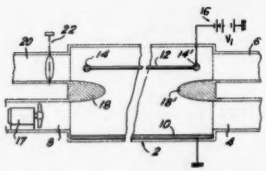
Robert Volsy, Brignoud, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 19, 1972, Ser. No. 316,522

Claims priority, application France, Dec. 31, 1971, 71.47801

Int. Cl. B03c *3/04*

U.S. Cl. 55—121 **8 Claims**



Particles suspended in polluted gas or atmospheric air to be analyzed and purified are charged and precipitated in a single unit comprising a leak-tight chamber of substantial length, an admission duct for the gas to be analyzed and a "clean" gas supply duct which are parallel and open into one end of the chamber, at least one outlet duct being located opposite to the admission duct at the other end of the chamber. The chamber contains at least two electrodes, one of which is a conductive plate adjacent to the admission and outlet ducts, the other being at least one electrode such as a conductive wire which produces a corona discharge in the gas.

3,827,218

VALVELESS LOW PRESSURE AIR DEHUMIDIFIER

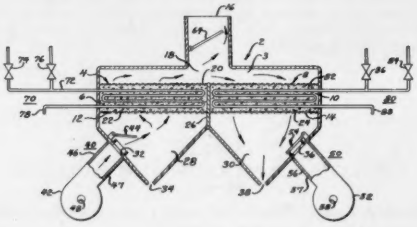
Bernard W. Settlemyer, Coraopolis, Pa., assignor to Ajax Magnethermic Corporation, Warren, Ohio

Filed Aug. 31, 1972, Ser. No. 285,549

Int. Cl. B01d *53/00*

U.S. Cl. 55—179 **2 Claims**

A low pressure air dehumidifier is disclosed in which damper means responsive to pressure caused by air flow from air intake blowers controls the flow of air through the dehumidifier. Where the dehumidifier includes two adsorbent beds having alternating drying and regeneration cycles, the blowers are operated alternately to thereby cause one vent means to open and allow moist air to flow through a drying bed. During this time the other blower is off and the other vent means is



closed. The two adsorbent beds are connected on their downstream sides so that dry air leaving one of the beds flows through the other bed to thereby regenerate the latter.

3,827,219

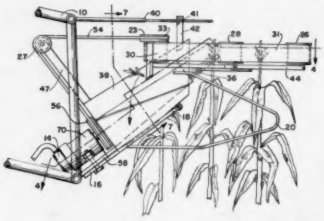
DETASSELING APPARATUS

Joseph A. Ackerman, Rural Rt. 3, Carmi, Ill. 62821

Filed June 25, 1973, Ser. No. 373,183

Int. Cl. A01d *45/02*

U.S. Cl. 56—53 **3 Claims**



The present invention relates to an apparatus for removal of tassels from corn and like plants. The apparatus is self-powered and mountable with a conventional hydraulic frame on farm implements. The apparatus consists of a belt feeder system to direct the upper portion of the plant stalk into a tassel severing means. The tassel severing means consists of two cooperating conical rollers adjustably inclined downwardly from the belt feeder system to the mounting means of said conical rollers. The rollers cooperate to sever the plant tassel from the plant stalk. The apparatus has a slotted shield below said roller severing means to depress and separate the leaves of the lower portion of the plant stalk from the plant tassel to be severed.

3,827,220

SAFETY GUARDS FOR ROTARY LAWNMOWERS

David Paul Seidel, Milperra, New South Wales, Australia, assignor to Victor Limited, New South Wales, Australia

Filed Oct. 10, 1972, Ser. No. 296,169

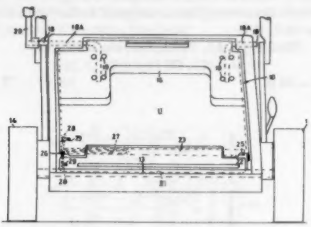
Claims priority, application Australia, Oct. 11, 1971, 6604/70

Int. Cl. A01d *67/00*

U.S. Cl. 56—320.2 **6 Claims**

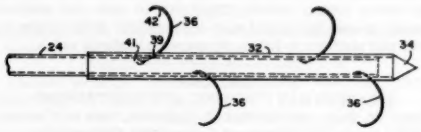
A safety cover guard for the grass discharging orifice of a rotary lawnmower provided with a removable grasscatcher having a protruding lip for gathering cuttings close to the blade cutting circle, the cover guard having a lower pivoted

flap to enable the protruding lip to enter the orifice while the cover guard is in position, means operable while the grass-



catcher is attached for removing the cover guard from the orifice, and resilient means for restoring the flap when the protruding lip of the grasscatcher is withdrawn.

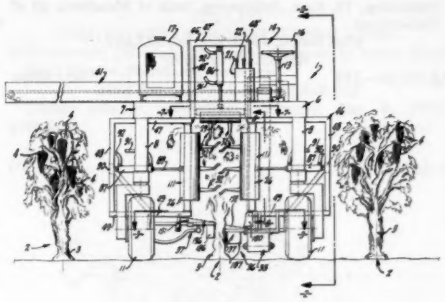
3,827,221
ORANGE PICKER
Pictiaw Chen, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed May 4, 1973, Ser. No. 357,486
Int. Cl. A01g *19/08*
U.S. Cl. 56—328 R **6 Claims**



An orange picker, particularly for use in a grove of orange trees, includes a portable carriage having a movable frame thereon. An arm is movable to and fro on the frame toward and away from an orange tree and is effective to penetrate into the interior of the tree. On the arm is a hook, preferably flexible, having a base portion secured to the arm and an outstanding terminal portion spaced from the arm. The hook is normally C-shaped and is resilient. In operation, the arm with the terminal hook withdrawn is thrust into the tree. The hook is projected from the arm and is then withdrawn. The hook is large enough to pass over, without effect, any small, immature oranges, is flexible enough to be deflected without harm by tree branches and the like and is small and strong enough to engage with an orange of a size to be picked. The inner edge of the hook interengages with the stem of a large orange and severs the stem or pulls the orange therefrom. The orange then falls into a suitable receiver.

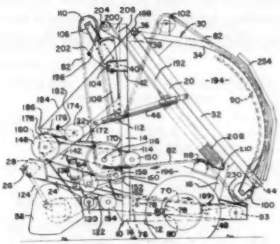
3,827,222
ROW CROP HARVESTING MACHINE
Andrew J. Toti, 311 W. River Rd., Modesto, Calif. 95351
Filed June 12, 1972, Ser. No. 262,128
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **76 Claims**

A machine for harvesting various row crops of which grapes are exemplary. The subject machine includes a plurality of selectively positionable picking units mounted on a self-propelled carriage on opposite sides and above the row crop to be picked. Each picking unit includes a plurality of picking arms designed to rotate selectively about their respective individual axes. Each picking arm includes an offset nose portion which moves eccentrically relative to the axis of the arm for most effective picking. Each picking unit preferably is adjustably mounted on the movable carriage so that the picking angle of the respective arms may be selectively oriented relative to the row crop being harvested. Each picking unit also may be mounted for reciprocal motion relative to the row crop to further enhance effective picking. Collecting means is



provided in conjunction with the picking units for gathering the crop and conveying the same automatically to an accompanying gondola truck or trailer for transportation to a processing plant.

3,827,223
HAY ROLL FORMING MACHINE
Allison W. Blanshine, Lititz; Jack W. Crane, New Holland, and Aquila D. Mast, Lancaster, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Apr. 24, 1973, Ser. No. 353,944
Int. Cl. A01d *39/00*
U.S. Cl. 56—341 **4 Claims**

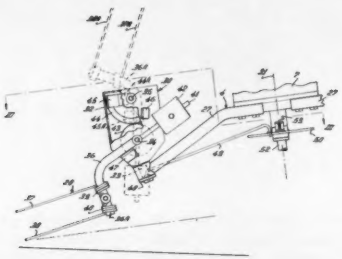


A machine to form compact rolls of hay of substantial size by picking up a swath or windrow of hay and the like from a field, engage it by cooperating upper and lower endless flexible aprons driven in suitable directions to coil the hay into a compact roll while supported upon floor means mounted stationarily in the bottom of the machine to effect baling of all the hay without loss upon the ground. When the roll type bale of hay reaches a predetermined diameter, the upper apron is raised to provide an exit and the lower apron assists in ejecting the bale onto the ground, or the machine can transport it to a desired location for discharge, if desired. The roll is initiated within a space between the upper and lower aprons which in cross-section is wedge shaped, the lesser distance between the cooperating courses of the aprons being adjacent the forward end of the machine, and results in a relatively soft core for the rolls, whereby when ultimate pressure is formed in the finished roll, the core is not unduly compressed.

3,827,224
DEVICE COMPRISING AT LEAST ONE RAKE MEMBER ADAPTED TO ROTATE ABOUT AN UPWARDLY EXTENDING AXIS

Herman Mulder, 17, Gaelstraat, Wateringen; Jan Huibert Leonard Philomena Van Pol, 16,'s Prinsensingel, and Berend Hakkeling, 19, Kon. Julianaweg, both of Maasland, all of Netherlands

Filed Nov. 6, 1972, Ser. No. 303,689
Int. Cl. A01d *79/00*
U.S. Cl. 56—370 49 Claims

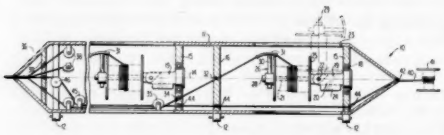


A raking device has one or more rotary rakes with tines that work crop by rotating in a circular path close to the ground. The tines are mounted in groups on radial spokes and are movable to another working position and/or a transport position by being pivoted relative to the rotary axis of the rake about a pivot connection. A displaceable guide member can be connected to the rear of the frame by a pivotal linkage. The guide member or another displaceable weighted mass is mounted on the frame and interconnected to the tines so that the displacement of the mass acts to pivot the tines from one position to another. An adjusting rod connects the tines to the rotary axis to afford a working setting of the position of the tines.

3,827,225
HIGH SPEED STRANDER

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 18, 1970, Ser. No. 38,414
Int. Cl. D07b *3/04*, *3/06*
U.S. Cl. 57—13 20 Claims

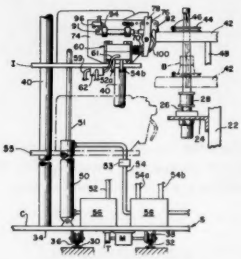


A high speed cable strander including a rotatable frame and one or more wire carrying bobbins carried by the frame. The bobbins are positioned with their longitudinal axes extending approximately parallel to the axis of rotation of the frame, and the wire is paid off the bobbins along the axes of the bobbins without requiring the bobbins to rotate.

3,827,226
RING RAIL TRACKING ARRANGEMENT FOR RING SPINNING MACHINES

Eliyu Lesser, Worcester, Mass., assignor to Leesona Corporation, Warwick, R.I.

Filed Sept. 19, 1973, Ser. No. 398,577
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R 7 Claims

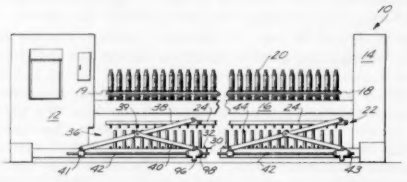


A tracking arrangement for synchronizing the vertical movement of a working platform; for example, forming part of an automatic servicing tender for ring spinning machines, with the vertically reciprocating ring rail of the spinning machine including drive means for independently moving said platform, means for sensing the changing position of said ring rail, and servo control means responsive to said rail position sensing means to control said independent drive means to drive said platform to follow the movement of said rail.

3,827,227
GRASPER BAR PIVOTING AND POSITIONING

Lester W. Pray, and Gordon C. Anderson, both of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,605
Int. Cl. D01h *9/00*, *9/04*
U.S. Cl. 57—52 5 Claims

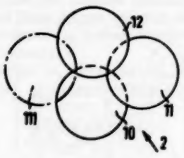


Disclosed are means for pivoting and positioning the bobbin tube grasper bars of an automatic doffing apparatus with precision and in concert on both sides of a textile yarn processing machine, such as a spinning frame, such that tube grasper elements depending from said bars are precisely positionable in coaxial alignment with and above the spindle blades thereof for donning tubes thereon by gravitational free fall. Present means obviate the problems associated with a non-linear or otherwise skewed grasper bar due to an imbalance of diverse forces imposed at diverse points along the longitudinal length thereof, as frequently occurs in prior art constructions. Present means employs a single actuating means, such as a hydraulic piston and cylinder assembly, joined by linkages to move control shafts on both sides of the machine, the control shafts in turn being interconnected with each grasper bar lifting and pivoting mechanism spaced therealong by a bell crank and pivot lever. Further present means includes adjusting means for balancing all forces exerted on the grasper bar and adjusting its aforesaid position exactly by changing the pivot point position of each bell crank.

3,827,228
TEXTILE APPARATUS

David L. McNeight, Congleton, and William John Morris, Manchester, both of England, assignors to Ernest Scragg & Sons Limited, Cheshire, England

Filed Feb. 26, 1973, Ser. No. 335,756
Int. Cl. D02g *1/04*; D01h *7/92*
U.S. Cl. 57—77.45 17 Claims

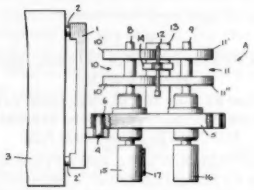


Apparatus for friction twisting is such that S-twisted yarn and Z-twisted yarn can be produced with like treatments, the apparatus not only allowing change of direction of travel of the friction surfaces relatively to the yarn path but also reversal of the direction in which the surface succeed one another around the path.

3,827,229
DEVICE FOR SELECTIVELY CHANGING THE SENSE OF ROTATION OF THE TWIST TUBES OF A FALSE-TWIST MACHINE

Joachim Bieniok, Wattwil, Switzerland, assignor to Heberlein & Co. AG, St. Gallen, Switzerland

Filed Oct. 19, 1973, Ser. No. 408,115
Claims priority, application Sweden, Nov. 1, 1972, 15901/72
Int. Cl. D02g *1/06*
U.S. Cl. 57—77.45 4 Claims



A mounting plate carrying rollers and drive means for driving a twist tube and a magnet for pressing the tube against the rims of the rollers, may be positioned in either of two positions 180° opposite from one another in order to reverse the sense of rotation of the tube by means on the mounting plate and on a machine frame which means cooperate with each other to permit such opposite mounting.

3,827,230
GLASS FIBER SIZE

Alfred Marzocchi, East Cumberland, and Nicholas S. Janetos, Providence, both of R.I., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

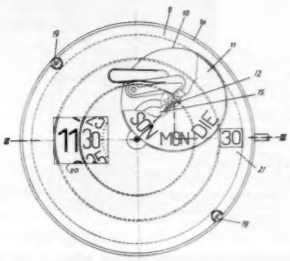
Continuation-in-part of Ser. No. 28,033, April 13, 1970, abandoned. This application July 27, 1972, Ser. No. 275,612
Int. Cl. D02g *3/18*
U.S. Cl. 57—140 G 17 Claims

A glass fiber size which is prepared by reaction of an epoxidized ester with an amino compound, a glycidoxy compound or a carboxy compound. In addition, the epoxidized ester can be replaced by a melaminealdehyde resin, a urea-aldehyde resin, a polyamide or a carboxylated butadiene-styrene resin. Glass fibers sized in accordance with the present invention show improved compatibility with impregnants formulated to include a resorcinol-aldehyde resin and an elastomer.

3,827,231
WRIST WATCH FOR DIGITAL INDICATION

Rolf Foerster, Pforzheim, Germany, assignor to Firma Bernhard, Foester, Pfarzheim, Germany

Filed Dec. 12, 1973, Ser. No. 426,682
Claims priority, application Germany, Jan. 8, 1973, 2300694
Int. Cl. G04b *19/24*
U.S. Cl. 58—5 8 Claims

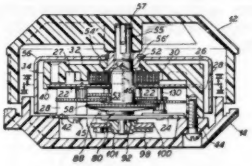


Digital indicating means comprise digit discs for indicating the time of the day and a rotary date ring for indicating the date of the month. A mounting ring is spaced around said date ring. A cross-member is carried by said mounting ring and overlies said date ring and has a recess which is eccentric with respect to said date ring. A day disc is accommodated in said recess and serves to indicate the day of the week.

3,827,232
SPRING DRIVEN TIMER

Ronald M. Bassett, Chicago, Ill., assignor to International Register Company, Spring Grove, Ill.

Filed Dec. 11, 1972, Ser. No. 313,967
Int. Cl. G04f *3/02*
U.S. Cl. 58—21.13 4 Claims



In a spring driven timer a partially transparent housing is provided for enclosing a main spring, a gear train, an escapement, and a bell-sounding hammer. A drive shaft passes through the housing, supported by a bearing on a wall of the housing. The shaft supports at one end a timing cam and a hammer-cocking cam, and supports at its other end a bell adapted to be sounded by said hammer and an upper case member adapted to be rotated manually for setting said timer by initially adjusting the angular position of said drive shaft. A lost motion connection between a stop lever rotatably mounted on the shaft and a stop dog secured to the shaft for rotation therewith, permits 360° rotation of the shaft during its initial adjustment.

3,827,233

GEOGRAPHICAL TIMEPIECE OR CLOCK

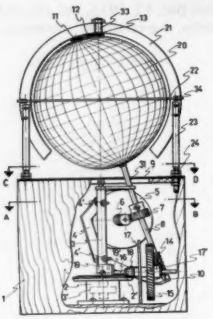
Jesus Villar Echevarria, and Jesus Villar Lopez, both of Avendia del Cid 124 Piso 13, Valencia, Spain

Filed June 22, 1973, Ser. No. 372,611

Claims priority, application Spain, Aug. 4, 1972, 182126; Jan. 5, 1973, 187411

Int. Cl. G04b *19/22*

U.S. Cl. 58—44 5 Claims



A geographical timepiece or clock wherein the minute hand shaft axially extends to a worm with which a worm gear, divided into 24 helicoidal teeth corresponding to the 24 hours of the day, meshes. The worm gear is attached to an elongated shaft which is joined to a dial whose surface is decorated as a terrestrial globe and which, on the end opposite to that receiving the dial, has a worm which engages with a worm gear having 75 teeth mounted on a second shaft. A third shaft is installed within a fixed support, has a strong structure and is provided for supporting the machinery by means of bearings and is coupled by a bevel gear having 73 teeth with a bevel gear having 15 teeth which is fixed to the second shaft.

3,827,234

DISPLAY DEVICE FOR CALENDAR WATCH

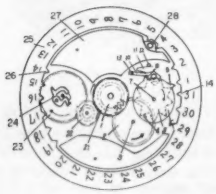
Kunimi Imanishi, 31-29, 3 cho-me Sanbashidori, Kochi, Japan

Filed Aug. 3, 1973, Ser. No. 385,294

Claims priority, application Japan, Aug. 3, 1972, 47-78679

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 1 Claim



A compact calendar watch is provided with a minimum number of component parts and displays correct dates automatically for one year from the first of March to the end of February at which time an adjustment is made manually; thus, troublesome monthly manual adjustments are eliminated.

3,827,235

WINDING AND SETTING MECHANISM FOR WATCHES

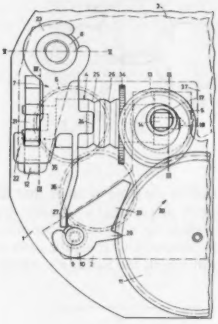
Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach, Switzerland

Filed June 18, 1973, Ser. No. 370,672

Claims priority, application Switzerland, June 30, 1972, 9897/72

Int. Cl. G04b *27/02*

U.S. Cl. 58—67 9 Claims



Winding and setting mechanism for watch movements, characterized by a drive pinion rigidly connected with the stem, by a sliding crown wheel mounted between the drive pinion and the center of the movement and cooperating with the ratchet wheel for the winding of the drive spring, and by a setting wheel mounted between the drive pinion and the periphery of the movement. The crown wheel has a circular opening engaged on a fixed pivot element of circular shape and of a diameter less than that of said opening, and it is held in engagement with the drive pinion by a portion of a bridge which extends trangentially to its toothing.

3,827,236

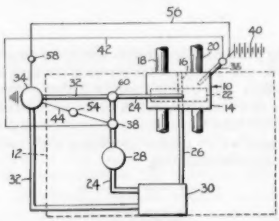
COOLING SYSTEMS FOR TURBOCHARGER MECHANISMS

Donald Rust, Star Rt., Box 20c, St. Paul, Oreg. 97137

Filed Dec. 18, 1972, Ser. No. 316,044

Int. Cl. F02b *37/04*; F02c *7/26*

U.S. Cl. 60—13 R 2 Claims



A cooling system for turbocharger mechanisms for the purpose of cooling the turbocharger mechanism when the vehicle engine has been shut off, thus preventing damage which may result from residual heat in the turbocharger. The system includes an auxiliary pump and conduits bypassing the engine oil pump, the auxiliary pump being controlled in part in its operation by a temperature responsive switch installed in the exhaust portion of the turbocharger. The temperature responsive switch is in an electric circuit with a pressure responsive

switch operated by the engine oil system, the arrangement being such that the auxiliary pump will operate when the engine is shut off as long as an elevated temperature exists in the turbocharger mechanism.

3,827,237

METHOD AND APPARATUS FOR REMOVAL OF NOXIOUS COMPONENTS FROM THE EXHAUST OF INTERNAL COMBUSTION ENGINES

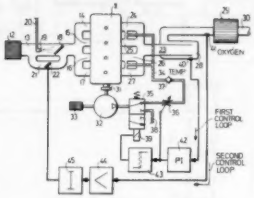
Ernst Linder, Muhlacker; Richard Zechnall; Josef Wahl, both of Stuttgart, and Peter Jergen Schmidt, Schwieberdingen, all of Germany, assignors to Robert-Bosch GmbH, Herlingen-Schillerhohe, Germany

Filed Oct. 24, 1972, Ser. No. 300,047

Claims priority, application Germany, Apr. 7, 1972, 2216705

Int. Cl. F02b 75/10

U.S. Cl. 60—274 **36 Claims**



A reactor to oxidize unburned hydrocarbons and carbon monoxide is connected to the exhaust system of the engine. A further reactor is connected to the exhaust system designed to reduce nitrogen-oxygen compounds (NO_x). A temperature sensing device senses the temperature of the reactors, and air is admitted to the exhaust system of the engine to control the temperature thereof; an oxygen signal is being sensed representative of oxygen component in the exhaust system of the engine and the mass ratio of air to fuel of the mixture supplied to the engine is controlled to provide for proper air-fuel ratio with minimum noxious exhaust. The two control loops thus formed are interconnected by the internal combustion engine, the control effects of the two control loops being balanced with respect to each other.

3,827,238

DEVICE FOR SUPPLYING A SUPPLEMENTARY FUEL TO A CATALYTIC ENGINE EXHAUST CLEANER

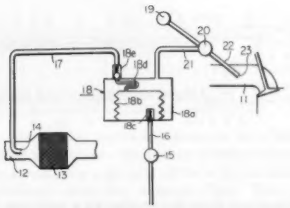
Yoshimasa Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Japan

Filed May 21, 1973, Ser. No. 362,297

Claims priority, application Japan, May 31, 1972, 47-54202

Int. Cl. F02b 75/10

U.S. Cl. 60—286 **11 Claims**



A device for supplying and metering supplementary fuel to a catalytic exhaust gas cleaner for increasing the efficiency of the catalyst, comprising a fuel reservoir, the flow rate of fuel from which is controlled by the presence of secondary air supplied to the exhaust system for increasing the re-combustion efficiency thereof.

3,827,239

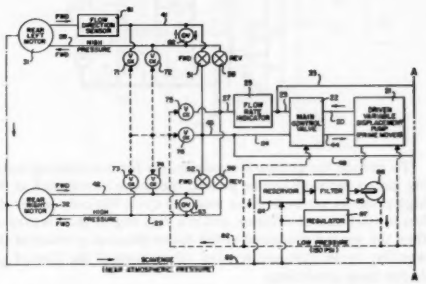
HYDRAULIC POWER TRANSMISSION AND BRAKING SYSTEM FOR VEHICLES

Bernhard Ulrich, Jr., Corpus Christi, Tex., assignor to Tex-Trans, Inc., Corpus Christi, Tex.

Filed Nov. 10, 1972, Ser. No. 305,513

Int. Cl. F16h 39/46; F15b 11/16

U.S. Cl. 60—420 **20 Claims**



A hydraulic power transmission and braking system for vehicles in which individual hydraulic wheel motors are connected through suitable control apparatus to a variable displacement hydraulic pump which is driven by an appropriate power source. The displacement of the pump varies automatically in response to hydraulic fluid pressure and flow rate requirements imposed by the vehicle operating conditions. The power transmission control apparatus automatically switches from the four-wheel drive mode to the two-wheel drive mode as the vehicle accelerates past a predetermined speed. The braking control system proportions the braking force applied to each of the hydraulic wheel motors in accordance with the load imposed on that wheel by the vehicle operating conditions.

3,827,240

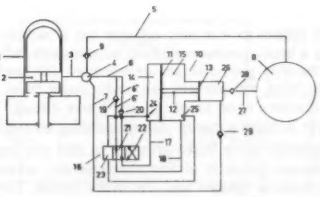
HOT GAS ENGINE

Ulf Rolfsson Lundquist, Mjolby, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Apr. 2, 1973, Ser. No. 346,940

Int. Cl. F02g 1/04

U.S. Cl. 60—521 **3 Claims**



In a Stirling cycle engine, a compressor pump pumps gas from the engine to a reservoir to decrease engine power. The compressor is of the differential piston type with a free piston with controls alternating the working gas pressure on the two sides of the piston to maintain high and low pressures operating a pump for storing working gas in a reservoir under pressure.

3,827,241

GOVERNING POWER OUTPUT OF HOT GAS ENGINES

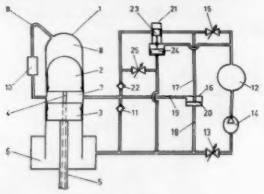
Sten Hakan Almstrom, Lund, and Yngve Roland Gothberg, Malmo, both of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Sept. 4, 1973, Ser. No. 394,090

Claims priority, application Great Britain, Sept. 5, 1972, 41038/72

Int. Cl. F02g 1/04

U.S. Cl. 60—521 5 Claims



To reduce the pressure requirements for introducing working gas to increase engine power, the gas is introduced at the high pressure portion of the working cycle but only under the low output load conditions, and if a high engine load is present then the gas is introduced at the lower pressure portion of the working cycle. Pressure sensing valves control the flow of gas under these conditions.

3,827,242

MASTER CYLINDER FOR A TWO-CIRCUIT BRAKE SYSTEM

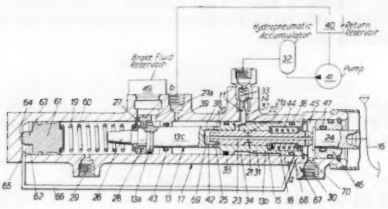
Juan Belart, Walldorf, Germany, assignor to PTT Industries, Inc., New York, N.Y.

Filed Nov. 20, 1972, Ser. No. 307,910

Claims priority, application Germany, Dec. 24, 1971, 2164590

Int. Cl. F15b 7/00

U.S. Cl. 60—552 24 Claims



This relates to a master cylinder for a two-circuit system having a brake pressure medium accumulator. More particularly there is provided an arrangement for such a master cylinder that will prevent the brake pedal from traveling a great distance upon failure of one brake circuit. The master cylinder includes a master piston operating on one chamber to hydraulically apply brake pressure to said one brake circuit. The master piston is at first mechanically actuated by the brake pedal to actuate said one brake circuit. The outer surface of the master piston includes an inclined ramp that opens a valve and permits the accumulator pressure to be applied to the brake-pedal-applied end of the master piston. To prevent travel of the brake pedal upon failure of said one brake circuit, a freely axially displaceable secondary piston is provided in said one chamber. The transverse surface of the secondary piston opposite the adjacent end of the master piston is supplied with brake pressure from the accumulator via the brake-pedal-applied end of the master piston upon failure of said one brake circuit. This will move the secondary piston against the adjacent end of the master piston and prevent movement of the master piston thereby preventing undesired brake pedal travel.

3,827,243

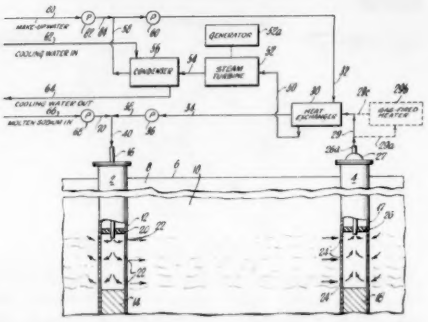
METHOD FOR RECOVERING GEOTHERMAL ENERGY

Peter L. Paull, Weston, Conn., and Paul F. Kerr, Palo Alto, Calif., assignors to Texaco Development Corporation, New York, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,783

Int. Cl. F03g 7/04

U.S. Cl. 60—641 23 Claims



A method of heating a fluid which can be, for example, molten sodium, in a dry geothermal reservoir formation penetrated by an injection well and a production well comprising injecting the said fluid into the formation via the injection well, forcing the fluid through the formation with simultaneous heating and finally recovering the heated fluid via the production well. Utilizing heat exchangers at the surface, the heated fluid may be employed to supply process heating requirements for steam making, preheating of refinery streams such as crude oil feed to distillation units, salt evaporation, etc.

3,827,244

A FORM FOR PRODUCING A CONCRETE LINING OF MINE GALLERIES, TUNNELS, SHAFTS OR THE LIKE

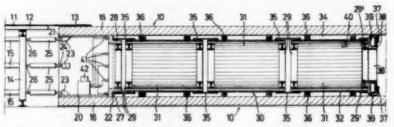
Heinz-Theo Walbrohl, Nordstrasse 73, Bonn, Germany

Filed Dec. 20, 1972, Ser. No. 316,715

Claims priority, application Germany, Dec. 22, 1971, 2163740

Int. Cl. E01g 5/16

U.S. Cl. 61—84 17 Claims



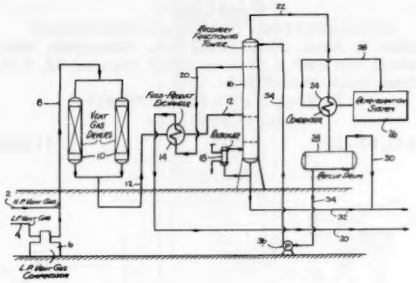
A shuttering or form for producing a concrete lining in galleries, tunnels, shafts or the like, in which the concrete is introduced between an inner shuttering and the natural soil, the concrete lining being supported by the form until the concrete has reached its desired strength.

3,827,245

RECOVERY AND PURIFICATION OF ETHYLENE FROM DIRECT HYDRATION ETHANOL VENT GAS STREAMS

Harold A. Nygaard, Lexington, and Jacob N. Rubin, Newton Highlands, both of Mass., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Sept. 22, 1971, Ser. No. 182,713
Int. Cl. F25j 3/02
U.S. Cl. 62—18 5 Claims



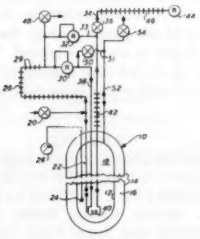
Apparatus and process for recovering ethylene from the wet vent gas streams of catalytic ethylene hydration. processes.

3,827,246

PRESSURE CONTROL SYSTEM FOR CRYOGENIC FLUIDS

Walter B. Moen, Berkeley Heights, and George R. Spies, Murray Hill, both of N.J., assignors to Airco, Inc., New York, N.Y.

Division of Ser. No. 777,048, Nov. 19, 1968, Pat. No. 3,650,290. This application Nov. 3, 1971, Ser. No. 195,512
Int. Cl. F17c 7/02
U.S. Cl. 62—50 9 Claims



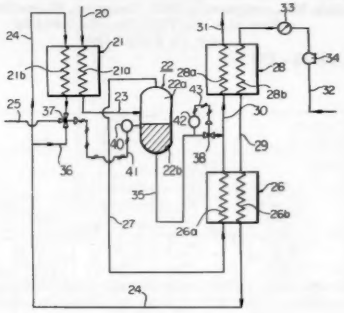
Heat for maintaining operating pressure in a single phase cryogenic fluid at or above the critical pressure is provided by controllably circulating a portion of the warmed delivery fluid in heat exchange with the storage fluid. The circulated delivery fluid is reheated and recombined with the remainder of the delivery fluid. A regulator device having a double acting valve element movable between two opposite positions controls flows respectively to a pressurizing heat exchanger coil and to a by-pass leading directly to delivery.

3,827,247

PROCESS OF COMPLETE CRYOGENIC VAPORIZATION OF LIQUEFIED NATURAL GAS

Yukiyasu Kojima, Yokohama; Kazuo Akiyoshi, Tokyo, and Kenji Kawada, Yokohama, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Feb. 8, 1973, Ser. No. 330,577
Claims priority, application Japan, Feb. 12, 1972, 47-14354
Int. Cl. F17c 7/02
U.S. Cl. 62—52 7 Claims



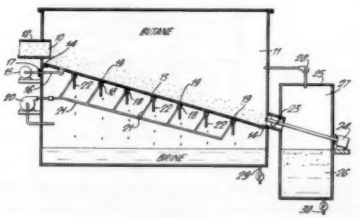
Liquefied natural gas is cryogenically vaporized completely while being utilized as a cryogen for cryogenic heat-exchange process by vaporizing the liquefied natural gas by a first vaporization step at a temperature lower than −110°C until the non-vaporized residue of the liquefied natural gas becomes a predetermined amount which is in a range between a critical percentage at which higher hydrocarbons in the residual liquefied natural gas are frozen out therefrom and a percentage higher by 8% than the critical percentage, separating the residual liquefied natural gas from the vaporized natural gas, conditioning the first vaporized natural gas to a temperature from −110° to −40°C and then, vaporizing the residual liquefied natural gas by a second vaporization step by introducing it into the conditioned first vaporized natural gas.

3,827,248

ICE CRYSTALS

Neophytos Graniaris, Riverdale, N.Y., assignor to Struthers Patent Corporation, Houston, Tex.

Filed Apr. 30, 1973, Ser. No. 355,690
Claims priority, application Great Britain, May 1, 1972, 20157/72
Int. Cl. B01d 9/04
U.S. Cl. 62—123 9 Claims



Ice crystals formed in a solution, such as in the ice crystallization conversion of seal water to fresh water, or slush freezing of citrus juice, coffee or tea, are washed in liquid butane at a temperature below 32° F. The crystals rest on an inclined screen sinking down in the butane and they are agitated

mechanically by butane jets and/or by vibration of the screen. Brine, which is mechanically washed from the crystals, sinks through the screen to be collected below it. Washed ice crystals move down the screen to be collected, melted and debutanized.

3,827,249

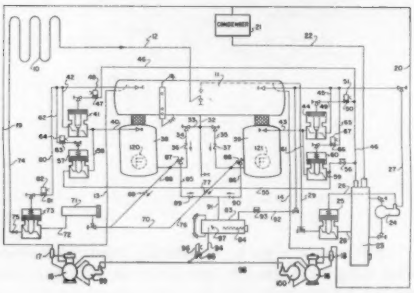
PRESSURIZED REFRIGERANT RECIRCULATION SYSTEM WITH CONTROL MEANS

Milton W. Garland, Waynesboro, Pa., and Robert C. Fish, St. Louis, Mo., assignors to Frick Company, Waynesboro, Pa.

Filed Mar. 12, 1973, Ser. No. 340,638

Int. Cl. F25b *43/00*

U.S. Cl. 62—174 **7 Claims**



A refrigeration apparatus having an accumulator-separator with a pair of pumping tanks which are sequentially operated by high pressure gas from the receiver for pumping liquid refrigerant to an evaporator. The apparatus provides a foolproof fail-safe automatically operated system in which the accumulator-separator and the pumping tanks are of a size to accommodate all of the refrigerant within the system so that a rise in pressure induced by temperature increase caused by a power failure is not sufficient to rupture the system.

3,827,250

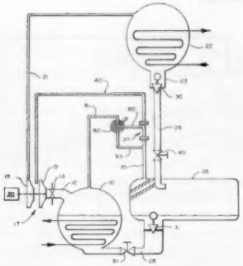
ECONOMIZER PRESSURE REGULATING SYSTEM

Hans Gerhard Kerschbaumer, and James W. Endress, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 23, 1973, Ser. No. 381,811

Int. Cl. F25b *41/00*

U.S. Cl. 62—196 **1 Claim**



The economizer pressure regulator installed in the line from the vapor area of the economizer to the second stage of the centrifugal compressor in a refrigeration system includes a valve movable to open and close a port in the line. The valve is movable toward open position by the direct application of pressure from the economizer against one side of the valve. The valve is urged toward closed position by a spring acting against the opposite side of the valve. The valve is also urged toward closed position by the pressure in the cooler of the refrigeration system. Accordingly, the vapor area of the economizer is not connected to the second stage of the compressor until the pressure in the economizer exceeds the pressure in the cooler, and, in addition, the force of the spring acting on the valve.

3,827,251

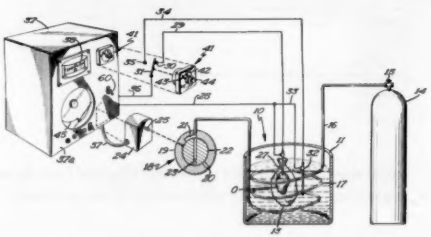
APPARATUS FOR COOLING A LIVING ORGAN

William L. Koski, 3905 Halifax Ave., Minneapolis, Minn. 55422, and Emil S. Swenson, 10500 Dogwood Rd. N.W., Coon Rapids, Minn. 55433

Filed July 2, 1973, Ser. No. 375,925

Int. Cl. F25b *41/04*

U.S. Cl. 62—217 **5 Claims**



An organ cooling apparatus includes a receptacle which contains a liquid bath and which has a refrigerant coil therein. A regrigerant, such as liquid nitrogen is passed through the coil to cool the liquid bath within the receptacle. The organ to be cooled is placed in the bath and a control device including a mechanical program mechanism is preset to cool the organ at a constant rate in a predetermined cooling cycle. Both the theoretical and the true temperatures of the organ are constantly monitored and indicated on a calibrated temperature scale and when the true temperature of the organ is less than the theoretical temperature a valve connected in flow controlling relation in the refrigerant conduit is operated to produce flow of the refrigerant and cooling of the organ. Conversely, when the true temperature of the organ is equal to or greater than the theoretical temperature, the valve is closed to interrupt the flow of refrigerant through the coil, and the cooling rate of the organ is also interrupted. With this arrangement, the organ is cooled at a predetermined uniform rate, and this method of cooling precludes damage to the organ.

3,827,252

METHOD OF REGULATION OF THE FRIGORIFIC POWER OF A JOULE-THOMSON REFRIGERATOR AND A REFRIGERATOR UTILIZING SAID METHOD

Patrice Chovet, Bernin; Claude Rollin, Grenoble; Honore Galasso, Echirolles, and Roger Prost, Saint Egreeve, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 19, 1973, Ser. No. 342,672

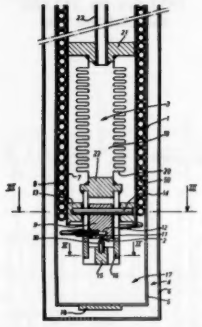
Claims priority, application France, Mar. 23, 1972, 72.10139

Int. Cl. F25b *41/04*

U.S. Cl. 62—222 **9 Claims**

The invention relates to a method of and apparatus for the regulation of the frigorific power supplied by a refrigerator utilizing the Joule-Thomson expansion of a refrigerant fluid at a temperature below its inversion temperature, in which the

flow-rate of the expanded refrigerant fluid is automatically regulated in dependence on the frigorific output to be supplied, and is regulated to a value higher than the flow-rate corresponding to the minimum frigorific power to be supplied, under steady operating conditions, by the expansion of said refrigerant fluid, so as to compensate for the thermal losses of said refrigerator under these operating conditions. The refrigerator comprises an expansion device consisting of an



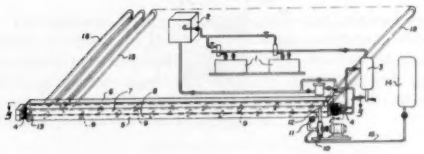
expansion orifice, a seating and a needle-valve, one of said two latter elements being fixed and the other movable, and a temperature-responsive detection device forming part of the regulation system and acting on said movable element in dependence on the temperature detected; the regulation may be effected by proportional action or by direct action, in the latter case, the temperature-responsive regulation chamber being constituted by a bellows member containing a charge of heat-expandable fluid.

3,827,253

CHILLER FOR ICE RINK REFRIGERATION SYSTEMS

George H. Williams, Coquitlam, British Columbia, Canada, assignor to Burrard Refrigeration Ltd., Port Moody, British Columbia, Canada

Filed Apr. 30, 1973, Ser. No. 355,938
Int. Cl. A63c *19/10*
U.S. Cl. 62—235 **13 Claims**



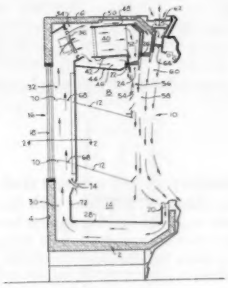
A chiller consisting of a tubular header for location alongside an ice rink and beneath the ice level. The chiller is divided into three vertically arranged longitudinal chambers having connectors for ice forming pipes which extend beneath the rink. Refrigerant conduction piping extends longitudinally through the chiller and connections are provided for a circulation pump to circulate the chilling medium within the header. The chilling medium being circulated through the header and ice forming pipes is chilled by heat exchange with the refrigerant carried by the refrigerant conduction piping from a refrigeration unit connected thereto.

3,827,254

REFRIGERATED DISPLAY CASE

Malcolm D. MacMaster, Yardley, and Herbert R. Morris, Morrisville, both of Pa., assignors to Emhart Corporation, Bloomfield, Conn.

Filed May 4, 1973, Ser. No. 357,331
Int. Cl. A47f *3/04*
U.S. Cl. 62—256 **16 Claims**



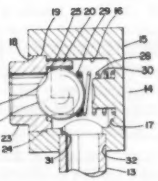
A refrigerated display case having a display space therein is provided with an access opening in the front of the case and an air curtain composed of a plurality of adjacent layers of air is directed across the access opening with the innermost layer of air adjacent the display space being at a higher temperature than an adjacent layer of air. Some of the air from the air curtain may be directed inwardly for circulation within the display space if desired. Refrigerated means are provided for refrigerating the air forming at least some of the layers of air forming the air curtain and the air forming the innermost layer of the air curtain may flow through a passage which by-passes the refrigeration means. The display space also may be provided with a rear access opening and duct means for circulation of the air forming the air curtain may have portions extending vertically upward at opposite sides of the rear access opening.

3,827,255

MEANS FOR PREVENTING FLOW OF LUBRICANT-SATURATED REFRIGERANT IN AUTOMOTIVE AIR-CONDITIONING SYSTEMS

Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.

Filed Mar. 30, 1973, Ser. No. 346,589
Int. Cl. F25b *41/04*
U.S. Cl. 62—296 **4 Claims**



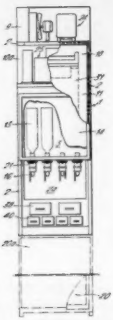
A check valve is incorporated in an automotive air-conditioning system for preventing flow of the refrigerant through the system when a car is not in use, whereby to avoid migration of the lubricating oil with which the refrigerant is saturated, and consequent damage to the compressor of the system. The check valve is preferably in the form of a spring-pressed ball, and is disposed between the compressor and muffler. To facilitate assembly in this system, the valve is provided as a part of a muffler and hose assembly.

3,827,256

BAR-CABINET FOR THE PRESERVATION, REFRIGERATION AND DISTRIBUTION OF ALCOHOLIC AND UNALCOHOLIC DRINKS

Alfredo Wiesner, via O. Beccari 23, Rome, Italy (00100)

Filed Jan. 23, 1973, Ser. No. 326,138
Claims priority, application Italy, Jan. 31, 1972, 48044/72
Int. Cl. F25c 5/18
U.S. Cl. 62—330 8 Claims



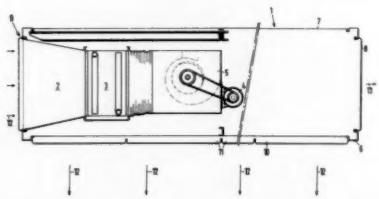
A bar cabinet for the preservation, refrigeration and distribution of alcoholic and nonalcoholic beverages at different temperatures, including a refrigeration unit for the production of ice cubes, wherein the cooling at different temperatures of the various drinks or components to produce said drinks or for the preservation of foods usually taken with the different drinks is performed by the ice cubes which move only under the effect of the force of gravity along a predetermined path associated with guiding means adapted to control the ice cube movements and to let a part of said cubes stop near the zones or devices or goods which require additional cooling.

3,827,257

AIR CONDITIONING SYSTEM

Cornelis Doomernik, Berghem, Netherlands, assignor to Wed. Joh. Verhulst en Zonen B.V., Netherlands

Filed May 2, 1973, Ser. No. 356,278
Claims priority, application Netherlands, May 4, 1972, 726018
Int. Cl. F25d 17/04
U.S. Cl. 62—418 1 Claim



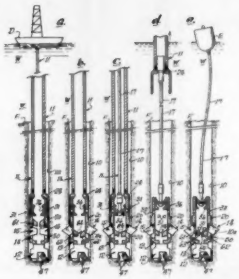
A free-of-draught air conditioning system comprising a plurality of cooling units each having its own air conditioning means. Each cooling unit and associated air conditioning means is housed in a housing having diffusely permeable sidewalls and a diffusely permeable bottom wall. The sidewalls and the bottom wall are preferably made of perforated, plastic-coated sheet metal panels.

3,827,258

DISCONNECTIBLE TORQUE AND AXIAL LOAD TRANSMISSION APPARATUS

Archer W. Kammerer, Jr., and Gary R. Johnson, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Los Angeles, Calif.

Division of Ser. No. 190,181, Oct. 18, 1971, Pat. No. 3,753,431, which is a division of Ser. No. 132,993, April 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 23,700, March 30, 1970, abandoned. This application Dec. 22, 1972, Ser. No. 317,656
Int. Cl. F16d 3/06
U.S. Cl. 64—23 12 Claims



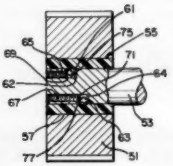
A tubular apparatus including an inner tubular member piloted within an outer tubular member, the members having a releasable connection through which torque and axial loads can be transmitted, such connection being readily disconnected, when desired, to permit axial separation between the members.

3,827,259

SELF HEALING CLUTCH

William S. Brucker, 1500 Providence Rd., Towson, Md. 21204

Filed Sept. 29, 1972, Ser. No. 293,455
Int. Cl. F16d 7/02, 7/06
U.S. Cl. 64—28 R 1 Claim

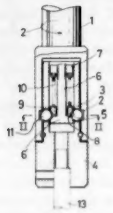


A power operated device, such as a portable power tool or the like, including a motor driven, rotary member coupled to an output member by a novel clutch. In accordance with the invention, the clutch is constructed to transmit torque from the motor driven member to the output member, under normal conditions; however, the clutch is designed to fail in shear or in cold flow, to allow relative rotation between the motor driven and output members, when the torque level in the device exceeds a predetermined safe value. The clutch is constructed to heal and recouple the driven and output members when the excessive torque level condition has been removed.

3,827,260
SHAFT-COUPLING DEVICE PREVENTABLE FROM OVER-TORQUE TRANSMISSION

Taizo Kato, 177-3 Minatoyamocho, Hyogoku, Kobe, Japan

Filed Sept. 25, 1972, Ser. No. 291,600
Claims priority, application Japan, Sept. 25, 1971, 46-87493; Sept. 25, 1971, 46-87494, Mar. 22, 1972 Japan 47-28846, Feb. 16, 1972 Japan 47-19287
Int. Cl. F16d 7/04
U.S. Cl. 64—29 2 Claims

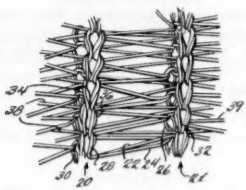


A mechanical shaft-coupling device fitted with at least one steel ball, inserted at the coupling part of driving and driven shafts, engages with both the driving and driven shafts under normal load to transmit normal torque but, shifts its position to cut the transmission with the driven shaft in over-loaded condition so that the driving shaft idles and no over-torque works on the driven shaft.

3,827,261
KNIT YARN PACKAGE

Kenneth J. Rupprecht, Little Compton, R.I., assignor to Globe Manufacturing Company, Fall River, Mass.

Filed May 8, 1972, Ser. No. 251,259
Int. Cl. D04b 21/00, 19/00
U.S. Cl. 66—195 2 Claims



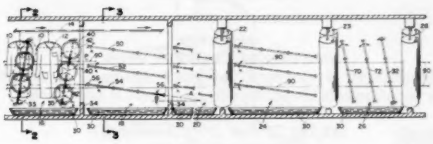
The disclosure relates to a yarn package that is knitted with spandex yarns in the form of a strip which is narrow in width compared to its length. The strip is formed on a flat bed, warp knitting machine to provide a double knit fabric with two matching faces and from an end of which a plurality of individual yarn strands can be unravelled.

3,827,262
SPRAY WASHING SYSTEM FOR GARMENTS

Malcolm O. Manuel, Stanton, Minn., assignor to A-T-O Inc., Willoughby, Ohio

Filed Nov. 1, 1971, Ser. No. 194,345
Int. Cl. D06f 31/00
U.S. Cl. 68—3 R 15 Claims

Spray washing system for garments. A pair of opposed nozzles on opposite sides of a garment hanging plane with the impact area of one of hollow form and that of the other elongated, extending thereacross, the former acting as a garment positioning element for the latter while both apply water to the garment. For washing pockets etc. sprays with elongated impact areas extending horizontally sweep upwardly, preferably in up down repeated manner, preferably pipes carrying the nozzles rotating about their own axes. An agitating section, e.g. for effective rinse, employs nozzles with elongated impact areas extending vertically, sweeping horizontally, preferably

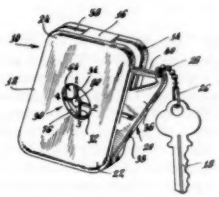


in a back and forth repeated manner, preferably also on pipes that rotate about their own axes. Vertically arranged soft roll pairs, such as of sponge rubber, driven at the same speed as the surface speed of the conveyor retain the water in each spray section. Horizontally extending wires in the zone of the opposed nozzles confine the garments to the hanging plane.

3,827,263
AUTOMATIC KEY-SELECTOR KEY CASE

Rupert M. Starrett, 94 Housatonic Ave., Stratford, Conn.

Filed Jan. 19, 1973, Ser. No. 325,043
Int. Cl. A47g 29/10
U.S. Cl. 70—456 R 12 Claims



An automatic key-selector key case having a plurality of individual pivotally mounted key drawers each for holding an individual key and a single selector-release mechanism for selecting the desired key by opening the appropriate key drawer. The key drawers are spring biased to an open position and include a spring latch which engages a bracket to retain the key drawer in a closed position. The selector-release mechanism is a push-button dial which may be rotated to one of several indicia identifying the different key drawers and which is then depressed to disengage the spring latch of the selected key drawer. The selected key drawer automatically opens by virtue of the spring biasing the drawer.

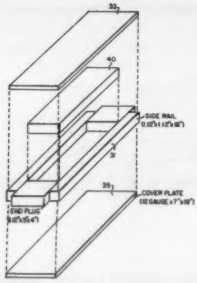
3,827,264
METHOD OF PRODUCING SHEETS AND ARTICLE TO PRACTICE SUCH METHOD

Gary E. Miller, Monroeville, Pa., assignor to Arco Nuclear Company, Philadelphia, Pa.

Filed July 20, 1966, Ser. No. 566,603
Int. Cl. B21b 45/00; B23p 17/00
U.S. Cl. 72—46 6 Claims

There is disclosed a method of reducing a billet of stainless steel containing about 2% of boron without edge cracking of the billet and without loss of the boron from the billet. The billet is coated with zirconia and enclosed in a jacket of mild steel and heated to about 1100°C. and rolled to the desired

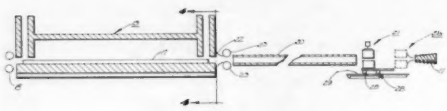
thickness. The zirconia prevents the billet from adhering to the jacket. The stainless steel is produced by melting rods of a standard stainless steel, for example AISI 304L, with a mild-steel can containing an appropriate quantity of boron powder.



3,827,265
FEEDING ORGANIZATION FOR GRINDING BALL MAKING MACHINE

Oscar L. Pardo, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Feb. 5, 1973, Ser. No. 329,551
Int. Cl. B21b *27/06*
U.S. Cl. 72—69 **8 Claims**



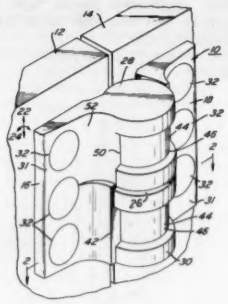
A bar feeding organization for ball machines wherein grinding balls are produced by passing a bar between tapered, helically grooved rolls which progressively cut the bar into short lengths and roll these short lengths into balls. A heating furnace accommodates a plurality of pieces of bar stock, which may in turn be aligned with an insulated feed tube. The bars are fed into this insulated feed tube, and a pinch roll arrangement at the exit end of the feed tube engages the bar and starts it rotating. The pinch roll arrangement is mounted for movement toward and away from the ball machine, whereby to feed a rotating bar into the rolls of the ball machine. By virtue of the feed tube, whipping about the bar stock in process is prevented, too rapid cooling of the trailing end of the bar stock is avoided, so that bar stock of great length may be used with safety.

3,827,266
BAR LOCK ASSEMBLY

Russell W. Walters, Reading, Pa., assignor to BMR Security Products, Reading, Pa.

Filed Aug. 3, 1972, Ser. No. 277,565
Int. Cl. E05b *63/00*
U.S. Cl. 70—104 **18 Claims**

A locking bar assembly for constraining opposing movable section elements. The assembly includes a pair of strike plates with each having one lug element. Each strike plate is rigidly secured to a respective section element in a manner such that bore through openings formed in each lug may be aligned. A bar lock mechanism is insertable through the bore openings in order to constrain the movable section elements. The locking bar assembly further includes a releasable capturing mechanism which provides for an external attacking force to be transmitted to the strike plates instead of to the bar lock mechanism.



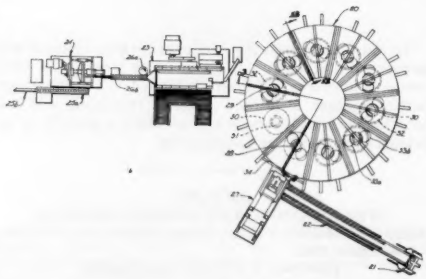
ERRATA

For Classes 72—46 and 72—69 see:
Patents Nos. 3,827,264 and 3,827,265

3,827,267
ROTARY HEARTH FURNACE AND SYSTEM FOR FORMING BALLS

Ernest W. Lowderman, Independence, Mo.; Leland L. Barrington, Overland Park, Kans., and Ferdinand Young, Jr., Independence, Mo., assignors to Armco Steel Corporation, Middletown, Ohio

Filed Oct. 16, 1972, Ser. No. 297,886
Int. Cl. B21b *27/06*
U.S. Cl. 72—69 **3 Claims**



A rotary hearth furnace comprising a single, unitary heating chamber the rotatable hearth of which is provided with a plurality of openings to receive turntables which are also rotatable, each turntable having a spindle to receive a coil or coils of rod. The furnace is provided with a charging station having a

lift mechanism which is movable from a retracted position beneath the hearth into engagement with a properly positioned turntable so as to enable the turntable to be raised out of contact with the hearth framework so that a coil may be deposited on the turntable about the spindle without putting undue strain on the hearth framework. The lift mechanism is capable of raising the turntable high enough above the hearth so that, when desired, the mechanism which is used normally to charge the coil of rod onto the turntable may be used to remove the turntable from the furnace. The furnace is also provided with an unreeling station having both a lift mechanism and a turntable rotating mechanism, all of which is movable from a retracted position beneath the hearth to an elevated position so as to move a turntable from contact with the hearth framework so that the rotating mechanism may be actuated to rotate that turntable in either direction as desired. This lift mechanism may raise this turntable to a more elevated position to enable any debris collecting between the turntable and the hearth to be cleared. An indexing mechanism is provided which moves the hearth and its turntables in a step by step fashion. A coil conveyor is provided by means of which a succession of coils of rod is brought to the charger which then places the coils in the furnace on a turntable at the charging station. The heated rod leaves the furnace from the unreeling station and is adapted to be fed immediately to a ball forging apparatus, whereafter such balls are immediately fed to a pancake sizer whereby the balls are finished to a truly spherical shape. After a coil is unreeled into the forging apparatus, the rotary hearth is indexed so as to bring the next turntable into such a position that a coil of rod thereon may also immediately be fed into such forging apparatus; this is continued so long as the forging apparatus is to be fed with rod, additional coils of rod being charged into the furnace on the emptied turntables as they are brought into charging position. Heating of a coil takes place as it moves through the furnace from charging position to unreeling position. Preferably the furnace is gas fired through burners located about the ceiling thereof.

3,827,268

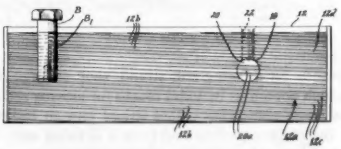
APPARATUS FOR MAKING SELF-LOCKING BOLTS

Jordan H. Stover, III, Tucson, Ariz., assignor to Rockford Screw Products Company, Rockford, Ill.

Division of Ser. No. 149,152, June 2, 1971, Pat. No. 3,763,903, which is a continuation-in-part of Ser. No. 770,359, Oct. 24, 1968, Pat. No. 3,601,830. This application Oct. 5, 1973, Ser. No. 403,789

Int. Cl. B21h *3/06*

U.S. Cl. 72—90 **6 Claims**



A thread is rolled on the bolt blank around a predetermined length thereof by a pair of thread-rolling dies, and during the thread-rolling operation the bolt is indented at diametrically opposed parts of its threaded length, to give a portion of this length a generally clliptical cross section which is near but spaced from the leading end of the bolt, the indented portion surrounding a central axial bore which opens through the leading end of the bolt. The thread-rolling dies are arranged to provide the thread on the major axis of the elliptical cross-section with a pitch diameter slightly greater than the normal pitch diameter above the elliptical section, such as about 1.03 times the normal pitch diameter, to provide the self-locking action. Thus the friction which causes the self-locking action occurs along the flanks of the threads, rather than at the crest and roots.

3,827,269

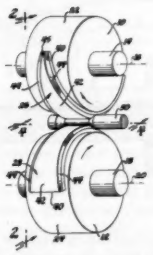
ROLL FORMING APPARATUS

Milton B. Hoagland, Troy, and Lawrence P. Wroblewski, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1972, Ser. No. 303,832

Int. Cl. B21d *37/06*

U.S. Cl. 72—108 **3 Claims**



An improved die for a "wedge roll" type roll forming machine including a pair of vertically spaced rolls adapted for rotation in the same direction and defining a pair of mounting surfaces adapted for rigidly supporting the dies, the improved dies including a generally triangular forming surface bounded along the leading converging edges by a pair of driving surfaces disposed at an angle with respect to the forming surface, each of the driving surfaces having formed thereon a plurality of randomly spaced and irregularly shaped raised projections having flat top surfaces, tapered sides and substantial column rigidity under compression forces.

3,827,270

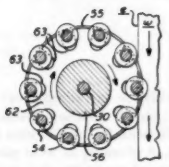
DEBURRING DEVICES

Hildaur L. Neilsen, 2 Juniper St., Metuchen, N.J. 08840

Filed June 14, 1973, Ser. No. 369,840

Int. Cl. B21d *19/00*

U.S. Cl. 72—199 **13 Claims**



An edge of sheet metal or other sheet material to be deburred is peened and/or rolled by plural peening or rolling elements loosely contained by a rapidly rotatable annular retainer formed with a circular, radially outwardly facing slot

through which peening and/or rolling action is provided between the metal edge held at said slot and the peening elements which are being centrifugally thrown outward by rapid rotation of said retainer.

3,827,271

DIE HOLDING DEVICE IN AN INDIRECT EXTRUSION MACHINE

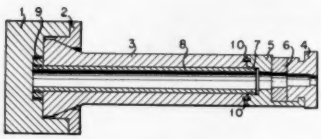
Shunji Kishino; Takahiro Abe, both of Muroran; Reishi Tamura, Noboribetsu, and Hiroshi Amano, Muroran, all of Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan

Filed Oct. 31, 1972, Ser. No. 302,507

Claims priority, application Japan, Nov. 25, 1971, 46-94135

Int. Cl. B21c *23/00*

U.S. Cl. 72—253 **5 Claims**



A die in an indirect extrusion machine is secured to the stem of the machine at its free end through a die gripper secured to the free end of the stem by such means as screwing and the gripper is adapted to snugly receive the die without allowing it to shift axially.

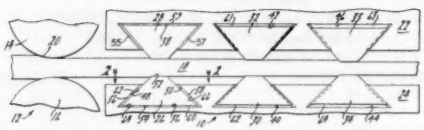
3,827,272

SHEET STEEL DRAW DIE

Louis J. Maiale, 3831 W. Paint St., Dearborn, Mich. 48204

Filed Apr. 23, 1973, Ser. No. 353,596

Int. Cl. B21c *37/02*

U.S. Cl. 72—203 **8 Claims**

A draw die assembly for extruding sheet steel material and the like comprising a pair of opposed dovetail shaped dies supported within complementally formed slots located in a pair of die holder members. A plurality of wear plates are interposed between the inner periphery of the slot and the engaging surfaces of the dies whereby to facilitate removal of the dies for sharpening or regrinding. In one form of the invention, three pairs of dies are provided with each pair being adapted to successively reduce the thickness of the material. In a second form of the invention, the thickness of the material is reduced by integral multi-drawing blades disposed in each of a single pair of opposed die elements.

3,827,273

SHEARING DEVICE FOR UNEXTRUDED BUTTS IN AN INDIRECT METAL EXTRUSION MACHINE

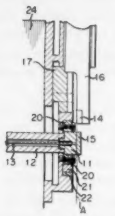
Shunji Kishino; Takahiro Abe, both of Muroran, and Reishi Tamura, Noboribetsu, all of Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan

Filed Oct. 31, 1972, Ser. No. 302,506

Claims priority, application Japan, Nov. 25, 1971, 46-94134

Int. Cl. B21c *23/00*

U.S. Cl. 72—255 **1 Claim**



In an indirect metal extrusion machine butts of a billet left on the end surface of a die are sheared off the die by a cutter arranged on a frame over the die when the die is retracted after the extrusion of the billet is completed.

3,827,274

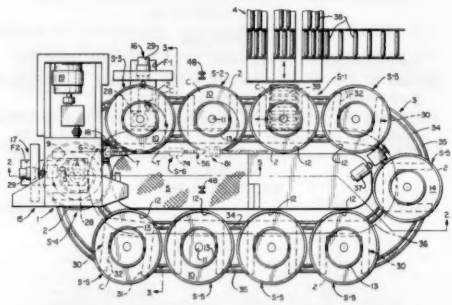
STRAND DRAWING APPARATUS INCLUDING MEANS FOR PREPARING THE LEADING END OF THE STRAND

James W. Schuetz, Pittsburgh, Pa., assignor to Aetna Standard Engineering Company, Ellwood City, Pa.

Filed Oct. 20, 1972, Ser. No. 299,236

Int. Cl. B21c *1/02*

U.S. Cl. 72—289 **25 Claims**



Apparatus for drawing stiff strand, such as large diameter tube, which apparatus includes means for moving receptacles, such as trays, containing coiled strand into an endless path, and in the endless path to and from a drawing unit. The apparatus includes a preparation station wherein by mechanical means the leading end of the stiff tube is moved into a preparation position, the leading end of the tube is grasped and dimpled so that it will prevent loss of a plug that is inserted into the end of the tube along with lubricant, the leading end of the tube is then pointed while it is so grasped, and the pointed leading end of the tube is mechanically moved to and through a die to the capstan of the drawing unit, on which leading end of the tube is grasped by a gripper. The tube is then wound on the capstan for a sufficient number of turns to provide a firm grip of the tube, after which the leading end of the tube is released and the drawing operation continued.

During the drawing operation the drawn tube is discharged downwardly over the free end of the capstan into one of the receptacles which has moved to and located below the capstan to receive a coil of drawn tube. The coil of drawn tube may then be moved through the path to a discharge station, or moved back to the preparation station in which the leading end of the tube is again prepared and inserted through the die and connected to the drawing unit for redrawing.

3,827,275

METHOD OF AND APPARATUS FOR THE UPSETTING OF BARS AND SIMILAR WORKPIECES

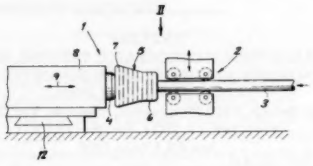
Franz Suttan; Paul Veit, and Oskar Rauber, all of Dusseldorf, Germany, assignors to Maschinenfabrik Hasenclever GmbH, Dusseldorf, Germany

Filed Dec. 4, 1972, Ser. No. 311,741

Claims priority, application Germany, Dec. 7, 1971, 2160635; Jan. 18, 1972, 2202234; July 1, 1972, 2232584

Int. Cl. B21d *37/16*

U.S. Cl. 72—342 **13 Claims**



A method of and an apparatus for the upset forming of the end of an elongated metal workpiece, such as a bar or rod, wherein an upsetting die or anvil is disposed within an induction-heating coil together with the end of the bar to be deformed. The anvil is thereby heated to a temperature at least equal to the temperature of the bar and the two are brought into axial engagement to deform the heated end of the bar. During deformation the anvil and the deformed end of the bar may be advanced out of the induction coil which preferably has an enlarged conical end to accomodate the head formed on the workpiece and the anvil. The remainder of the induction coil may lie along a cylinder coaxial with the workpiece.

3,827,276

SHIFT TRANSMISSION WITH SLIDEABLE GEAR-ENGAGING SLEEVE, PARTICULARLY FOR MOTOR VEHICLES

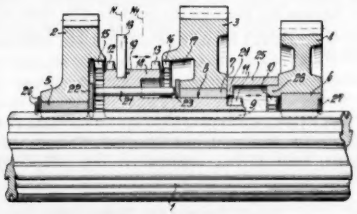
Eduard Willers, Kaarst, Germany, assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 13, 1972, Ser. No. 314,886

Claims priority, application Germany, Dec. 15, 1971, 2162341

Int. Cl. F16h *3/08*

U.S. Cl. 74—363 **2 Claims**



Series of gears in constant mesh with their mating gears rotatably borne on a sleeve non-rotatably arranged on a shaft. Additional series of gears located at each end of the sleeve and being borne by the shaft, whereby the sleeve can be longitudinally shifted to engage one set or the other.

3,827,277

APPLICATOR FOR SURGICAL CLIPS

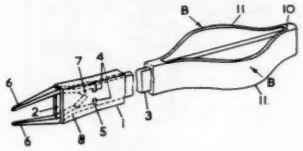
David Frederick Weston, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 56,519, July 20, 1970, abandoned. This application June 22, 1973, Ser. No. 372,510

Claims priority, application Great Britain, July 29, 1969, 37944/69

Int. Cl. B21d *9/08*; B25b *9/02*; A61b *17/12*

U.S. Cl. 72—410 **1 Claim**



A hand-operated applicator for use with surgical clips, such as wound clips, comprising a pair of elongate members, one of which is capable of axial movement within a longitudinal cavity in the other, and a pair of jaws projecting from the cavity resiliently biassed into an open position and connected to the inner elongate member so that the said axial movement causes the jaws to close against the bias. Clips are fitted into the jaws, preferably from a magazine. The applicator can be made entirely from plastic material but it may be preferred to make the small jaw members from steel. The cost could be low enough to allow the applicator to be supplied pre-sterilised and thrown away after one operation.

3,827,278

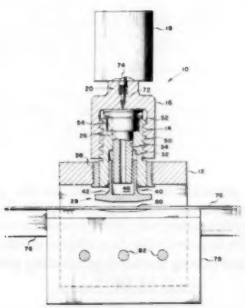
JOGGLING TOOL

Butler A. Mershon, and Keith A. Wilhelm, both of Burbank, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 4, 1973, Ser. No. 366,713

Int. Cl. B21j *7/24*

U.S. Cl. 72—430 **15 Claims**



A joggling tool explosively actuated to release energy at a high rate to a punch member which physically imparts a force to a workpiece held in a forming die member to accomplish a joggle or indentation therein. A cartridge mounted upon an inner barrel member is fired to develop explosive gas in its bore chamber to drive the punch member. An outer barrel member is mounted about the inner barrel member to guide the movement of the punch member. A breech housing cir-

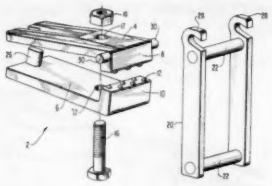
cumscribes both barrel members and has mounted thereon a firing device for the cartridge. The outer barrel member is supported by a frame member or yoke which is securely mounted, such as by locating pins, to the forming die member.

3,827,279

WEDGE-TIGHT CLAMP

Ervin Buske, P.O. Box 190, Gowrie, Iowa 50543

Filed Mar. 16, 1973, Ser. No. 341,913
Int. Cl. B21d *1/12*
U.S. Cl. 72—457 **1 Claim**



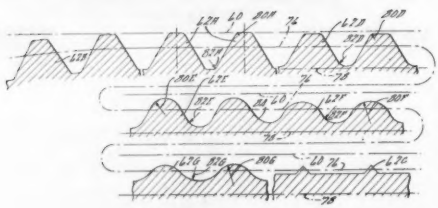
The gripping end of a pair of jaws are clamped over the work by means of a clamp screw. Engaged between the other ends of the jaws is a bar on a shackle. When a pulling force is applied to the shackle in the longitudinal direction of the jaws, the other ends of the jaws tend to spread, the jaws pivot about the clamp screw, and the gripping ends thereof tighten against the work. At the gripping end, one of the jaws is provided with projections which are engageable by hooks on the shackle so that a pull at right angles to the longitudinal direction of the jaws can be applied to the work.

3,827,280

TOOTH FORMING TOOL

Robert L. Miller, Warren, and Louis M. Fisset, Roseville, both of Mich., assignors to Ex-Cell-O Corporation, Highland Park, Mich.

Filed Feb. 2, 1973, Ser. No. 329,069
Int. Cl. B21h *5/02*
U.S. Cl. 72—469 **8 Claims**



A tool for pressure forming teeth on the periphery of a cylindrical workpiece, the tool having an improved tooth generating configuration which improves the useful life of the tools and which improves the flow characteristics of the metal in the workpiece during the tooth generating process.

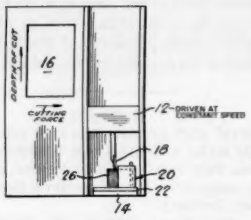
3,827,281

SHEET MATERIAL AND KNIFE EDGE ABRASIVE TEST

Richard Hamel, Dorion, Quebec, Canada, assignor to Domtar Limited, Montreal, Canada

Filed July 31, 1972, Ser. No. 276,771
Claims priority, application Canada, Aug. 3, 1971, 119,714
Int. Cl. G01n *3/58*
U.S. Cl. 73—7 **5 Claims**

A method and apparatus for testing the abrasiveness of materials such as paper, textiles, or the like, by pressing a sharp but relatively easily dulled cutting edge through a plurality of layers of paper and registering the force necessary to



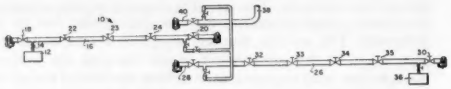
move the knife edge through the layers relative to the depth of cut thereby to obtain an indication of the rate of dulling of the knife and thus the abrasion characteristics of the paper.

3,827,282

INSTALLATION, HYDROSTATIC TESTING, REPAIR, AND MODIFICATION OF LARGE DIAMETER FLUID TRANSMISSION LINES

Beryle D. Brister, 3902 Huntington, Amarillo, Tex. 79101

Filed July 19, 1971, Ser. No. 163,871
Int. Cl. G01m *3/00*
U.S. Cl. 73—40.5 R **18 Claims**



A pipeline, or a section of pipeline, is hydrostatically tested after assembly by pumping water into the pipeline behind a pig to completely fill a test section. A short length of the water in the pipeline is then frozen to form an ice plug at one or both ends of the test section. Additional water is then pumped into the test section to bring the pressure to a high value, typically at least 90 percent of the minimum specified yield strength of the pipe on one side of the ice plug. A lower pressure is established on the other side of the ice plug and is monitored to test the integrity of the ice plug. The test pressures and the ice plugs are maintained for at least 24 hours. If there is pressure loss, the leak is located and repaired. If there is no pressure loss, water is then pumped into the next test section and the procedure repeated. After all of the test sections have been tested, the water is then purged from the pipeline by pumping a dewatering pig through the pipeline, either with products or air. The method is also applicable to either test or repair pipelines which are in service by pumping a long slug of water through the line with the product. The water may then be frozen to provide ice plugs for testing, repairing or modifying the pipe.

3,827,283

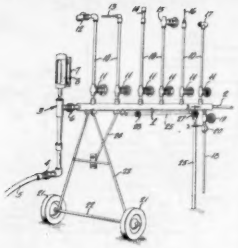
FLUID LEAKAGE MEASURING APPARATUS

Julius Lerner, Broomall, and George F. Campbell, Jr., Glen Riddle, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Mar. 5, 1973, Ser. No. 337,961
Int. Cl. G01m *3/04*; G09b *25/04*
U.S. Cl. 73—40 **4 Claims**

A fluid manifold, to which high-pressure steam may be supplied, has coupled thereto a row of individually valved branch

pipes each of which terminates in a respective leaky component (which produces a steam leak). A rotameter coupled



to the manifold measures the quantity of steam escaping through a selected, typical leaky component. The assembly is arranged to be easily transportable.

3,827,284

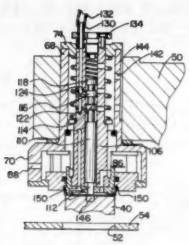
APPARATUS AND METHOD FOR PROCESSING AND TESTING MANUFACTURED ARTICLES

Thaddeus J. Armstrong, Elmwood Park; John A. Styczen, Niles, and Ladislav J. Klasek, North Riverside, all of Ill., assignors to Continental Can Company, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,063

Int. Cl. G01m *3/26*

U.S. Cl. 73—45.1 **62 Claims**



An apparatus and method for processing or treating and simultaneously testing individual articles for conformance to predetermined standards or tolerances, and for rejecting articles failing to meet such standards.

The apparatus is typically embodied in a combination curler and tester for jar caps, and is adapted to receive a partially finished jar cap and impart a curl to the skirt portion thereof while simultaneously performing plural tests to determine that the curl is properly formed and that the gasket forming material is present in the configuration and amount necessary to prevent cap leakage. The apparatus includes a novel testing head assembly in which the position of a relatively movable detector element serves to control the flow of certain of the air used in testing, the testing head also including portions adapted to engage adjacent portions of properly formed caps to define a leak-tight air chamber and thereby to create a detectable air back pressure. Since air flow in the testing head is used to control air flow in an associated logic circuit, the decision of the circuit to accept or reject a cap is brought about in direct response to the condition of the cap being tested. The method includes detecting the condition of certain portions of the articles to be tested, and using the detecting means to control directly the air used within the associated fluidic logic circuit.

3,827,285

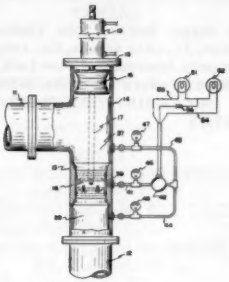
FLOW CONTROL APPARATUS AND METHOD WITH LEAK DETECTION

Marvin H. Grove, Houston, Tex., assignor to M & J Valve Company, Houston, Tex.

Continuation-in-part of Ser. Nos. 242,125, April 7, 1972, and Ser. No. 274,441, July 24, 1972, abandoned. This application May 21, 1973, Ser. No. 362,231

Int. Cl. G01m *3/28*

U.S. Cl. 73—46 **8 Claims**



Apparatus for forming a liquid seal between two fluid spaces. A plunger means is movable between retracted and projected positions with respect to a sleeve that connects the spaces. Resilient sealing members carried by the plunger are so constructed that when contracted and stressed by movement into the sleeve, a pressure drop occurs in the space between the members. The resulting pressure differential is used to detect leakage. Also a method for leak detection making use of such apparatus.

3,827,286

DEVICE FOR BLOOD SEDIMENTATION RATE ESTIMATION

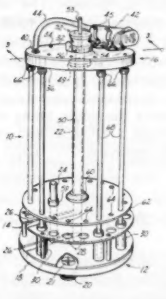
Kenneth Arthur George Bond; Roger Cameron Munro, both of Swansea, Wales, and Reginald Hayler, Shoreham-by-Sea, England, assignors to Gelman Instrument Company, Ann Arbor, Mich.

Filed July 21, 1972, Ser. No. 273,829

Claims priority, application Great Britain, July 29, 1971, 35703/71

Int. Cl. G01n *15/04, 33/16*

U.S. Cl. 73—61.4 **15 Claims**



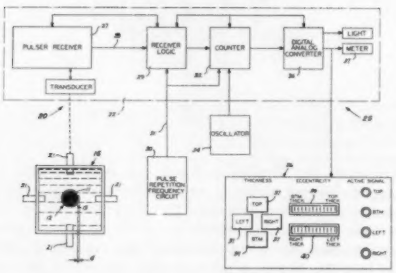
A device for use in determining the sedimentation rate of blood samples having a stand, a rack removably mounted on the stand and adapted to retain a plurality of specimen holders for blood samples, and a manifold with a plurality of pipette

holders adapted to each receive a pipette and establish through a common manifold communication of the pipettes with an apparatus for drawing a vacuum. The manifold can be carried by the stand in one position with the free end of the pipettes above the specimen holders and in a second position in which the free end of each pipette is lowered into its associated specimen holder.

3,827,287
METHODS OF AND APPARATUS FOR MEASURING THE THICKNESS OF SUCCESSIVE SECTIONS OF A CABLE JACKET

Luther Miles Boggs; Howard John Flichman, and James Alphus Hudson, Jr., all of Atlanta, Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 5, 1972, Ser. No. 268,961
Int. Cl. G01b *17/02;* **G01n** *29/00*
U.S. Cl. 73—67.8 S **30 Claims**



In an ultrasonic cable jacket measuring system including a pulsed crystal transducer, successive associated pairs of echo pulses associated with surfaces of the cable defining jacket thickness are received. Data proportional to jacket thickness in the event that a sequence of associated first and second pulses are valid as determined by values expected in a specific environment and arrangement and of particular materials, the thickness of which is being measured.

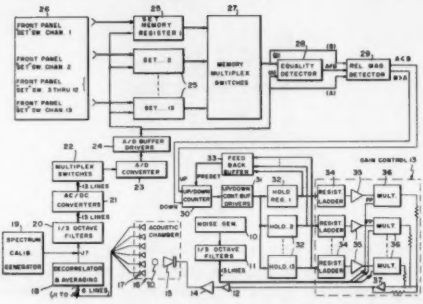
A valid first echo pulse has a predetermined threshold amplitude which is not exceeded after a preset time value as tested by a first echo pulse verification circuit. A valid second echo pulse has at least a predetermined peak amplitude and at least a predetermined duration characteristic as determined by a second echo pulse verification circuit. A first echo pulse having threshold amplitude causes operation of a logic circuit for initiating a time count which is concluded upon a validating of the first echo pulse and upon receipt of a second echo pulse having threshold amplitude. The validation of the first and second pulses enables a control pulse generator which is operated at the end of a time interval in which the logic circuit expects the receipt of echo pulses to provide for the further processing of the time count. A sequencer pulses sequentially each of a plurality of channels associated with a plurality of crystals arrayed about the cable being advanced through a cooling trough to begin a test cycle and conditions the system for another cycle of operation.

3,827,288
DIGITAL SERVO CONTROL OF RANDOM SOUND TEST EXCITATION

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert B. Nakich, Glendale, Calif.

Filed Mar. 16, 1972, Ser. No. 235,338
Int. Cl. G01n *29/00*
U.S. Cl. 73—69 **10 Claims**

A digital servo control system for random noise excitation of a test object in a reverberant acoustic chamber employs a plurality of sensors spaced in the sound field to produce signals in separate channels which are decorrelated and averaged. The average signal is divided into a plurality of adjacent frequency bands cyclically sampled by a time division multiplex system, converted into digital form, and compared

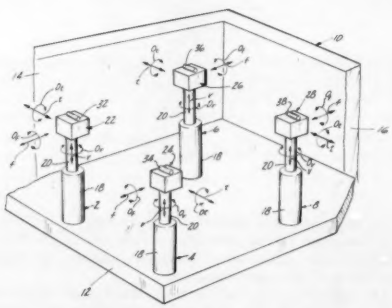


to a predetermined spectrum value stored in digital form. The result of the comparisons are used to control a time-shared up-down counter to develop gain control signals for the respective frequency bands in the spectrum of random sound energy picked up by the microphones.

3,827,289
VEHICLE TEST FIXTURE

Henry A. Borg, Romeo, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1972, Ser. No. 312,418
Int. Cl. G01m *17/04*
U.S. Cl. 73—71.7 **15 Claims**



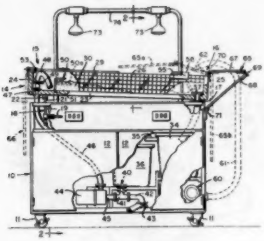
A test fixture for an all-wheel drive vehicle provides a vertical hydraulic ram for each wheel position. Universal joint type connecting means are used to secure the vehicle atop the rams in the same way that the vehicle is secured to the wheels. Each connecting means, with its ram, permits six degrees of movement to the wheel spindle to allow the spindle to move in accordance with the dictates of the wheel suspension geometry as the ram raises and lowers the wheel spindle to simulate irregularities in terrain. The fixture has input capabilities for fore-and-aft as well as transverse forces, and torque input to the wheel drives is provided for separate dynamometer loading of the wheel drives. The rear connection is shown provided with means to adjust the tapered roller bearings remotely, including a long-handle socket wrench which remains in place and is accessible after removal of the dynamometer connection, without disassembling the means by which the wheel spindle is mounted on the ram.

3,827,290

STREAM TABLE STUDY CENTER

Arthur W. Carlson, Muskegon, Mich., assignor to E. H. Sheldon and Company, Muskegon, Mich.

Filed Mar. 6, 1973, Ser. No. 338,505
Int. Cl. G01m *10/00*
U.S. Cl. 73—86 7 Claims



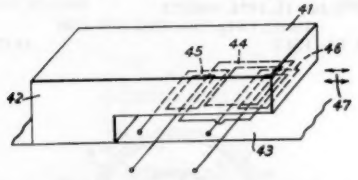
A portable stream table for simulating the effect of waves on a land mass and for measuring and recording the resulting erosion of the land mass.

3,827,291

TRANSDUCER SYSTEMS FOR DETECTION OF RELATIVE DISPLACEMENT

Leo Francis McCalvey, Newcastle upon Tyne, England, assignor to International Research & Development Company Limited, Newcastle upon Tyne, England

Filed Nov. 29, 1971, Ser. No. 202,991
Claims priority, application Great Britain, Dec. 1, 1970, 57113/70; Dec. 31, 1970, 62035/70; June 23, 1971, 29508/71
Int. Cl. G01b *7/24*
U.S. Cl. 73—88.5 R 3 Claims



A transducer system wherein relative displacement of two members is detected by the change in inductive coupling between a single coil on one member and a pair of opposed coils on the other member, an A.C. input being applied to the coil or coils on one of the members and the output from the coils or coil on the other member being detected when the single coil is displaced from its normal symmetrical position relative to the two coils. The displacement to be measured may result from mechanical movement or vibration or from load, pressure or acceleration applied to devices incorporating the transducer system.

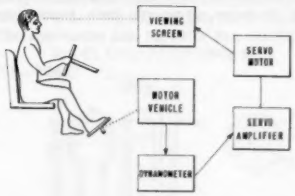
3,827,292

OPTICAL AID FOR SIMULATED DRIVING OF MOTOR VEHICLES

Joseph Zelson, Claymont, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed June 6, 1972, Ser. No. 260,246
Int. Cl. G01m *15/00*
U.S. Cl. 73—117 2 Claims

Method and optical driver aid for following a prescribed simulated motor vehicle driving schedule, for example, such as used in automobile exhaust emission control tests, wherein a moving driving cycle trace is projected onto a viewing screen



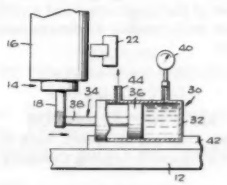
and followed by an indicator means which is responsive to the motor vehicle speed and operation.

3,827,293

MACHINE TOOL SPINDLE CALIBRATION METHOD AND APPARATUS

Clive P. Hohberger, Port Jefferson, N.Y., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed July 3, 1972, Ser. No. 268,743
Int. Cl. G01n *3/08*
U.S. Cl. 73—133 R 12 Claims



A simple method and apparatus is disclosed for the calibration of a numerically controlled milling machine or the like, to determine the compliance for a particular set-up of the machine. The apparatus includes a hydraulic cylinder mounted on the machine bed, with the end of the hydraulic piston bearing against a non-rotating cutting tool that is mounted in the spindle. A pressure gauge or pressure switch indicates fluid pressure in the hydraulic cylinder to determine force of the piston on the cutting tool, and a deflection sensor measures the static deflection of the spindle. In one apparatus, hydraulic fluid from a high pressure source passes through a pressure-reducing valve into the rear of the hydraulic cylinder to push the piston rod end against the cutting tool, without requiring motion of the spindle relative to the bed, the valve being adjusted to maintain a desired fluid pressure behind the piston despite leakage of fluid past the piston.

3,827,294

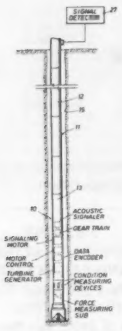
WELL BORE FORCE-MEASURING APPARATUS

Ronald A. Anderson, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 14, 1973, Ser. No. 359,829
Int. Cl. E21b *47/00*
U.S. Cl. 73—151 20 Claims

In the representative embodiment of the apparatus of the present invention disclosed herein, a pair of force-measuring sleeves are telescoped together and coaxially mounted on a drill string sub with their opposite ends engaged with opposed shoulders on the tubular sub body so that even minor torsional or longitudinal forces acting on the body will cause proportional movement of the sleeve members in relation to one another. To detect these forces, a loop-like deformable

member having circumferentially-spaced rings joined together by elongated strips or bars is coaxially disposed on the sub body with the spaced rings tightly clamped between opposed shoulders on the sleeve members. Signaling means are coupled to two or more arrays of strain gages respectively



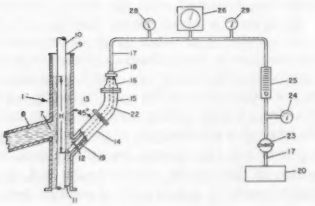
mounted on the rings and bars forming the loop and cooperatively arranged for transmitting signals to the surface which are representative of the longitudinal and torsional forces imposed on the sub body tending to dimensionally distort the loop-like member.

3,827,295

BELL NIPPLE MONITOR

Robert W. Rochon, and Joe W. Sneed, both of San Antonio, Tex., assignors to Monarch Logging Company, Inc., San Antonio, Tex.

Filed June 29, 1972, Ser. No. 268,187
Int. Cl. E21b *47/10*
U.S. Cl. 73—155 **1 Claim**



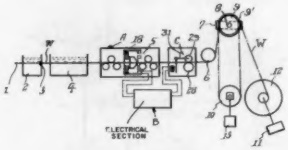
A method and apparatus for use in warning of changing conditions in a well during the drilling thereof consisting of determining differences in the hydrostatic head of the drilling fluids in the bell nipple above the flow line and recording the hydro static pressure to give a continuous record of changes during normal drilling operations. The apparatus consists of an air conduit connected to a bell nipple through an orfice in the bell nipple below the flow line. The air conduit communicates with a source of compressed air which is supplied with an air regulator for the purpose of maintaining a constant pressure source. Changes in hydrostatic head of the drilling fluid above the orfice is continuously detected by changes in the pressure in the air conduit and these changes are continuously recorded and correlated to reflect mud volume changes in the drilling fluid from the well.

3,827,296

SURFACE FLAW DETECTING DEVICE FOR COATED WIRE

Yoshihisa Hidaka, 26-14 Matsubara 3-chome, Setagaya-ken, Tokyo, Japan

Filed Aug. 15, 1972, Ser. No. 280,873
Claims priority, application Japan, Aug. 17, 1971, 46-62023
Int. Cl. G01l *5/00*; B65h *25/00*
U.S. Cl. 73—160 **11 Claims**



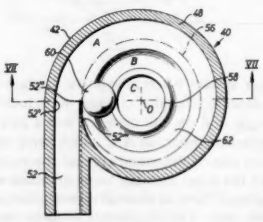
A device advantageously usable at the output end of a wire coating line to detect surface flaws in the coated wire and place thereon visual flaw-indicating marks. It includes a feeler and a marking roller both arranged along the path of wire travel and the latter is operable under control of an electric signal from the feeler action with an appropriate time lag.

3,827,297

FLOW METER PROVIDED WITH A VORTEX CHAMBER

Tor Lennart Bernt Griverus, Nasbydalsvagen 6, 183 31 Taby, Sweden

Filed Oct. 30, 1972, Ser. No. 302,021
Claims priority, application Sweden, Nov. 10, 1971, 14334/71; July 18, 1972, 9460/72
Int. Cl. G01p *5/06*; G01f *1/00, 1/06*
U.S. Cl. 73—194 C **15 Claims**



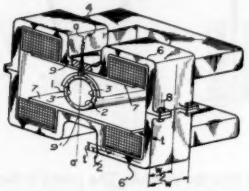
A flow meter for measuring the flow parameters of liquid, gaseous and multicomponent media is comprised of a housing encompassing a flow chamber through which the medium flows while passing in a swirling movement three distinct, concentric flow zones, there being an inlet zone, an outlet zone and an intermediate sensing zone in which the flow parameters of the medium can be sensed and measured. Means are provided in the inlet zone for guiding the medium in a manner such that all particles thereof cross the interface between the inlet zone and the sensing zone uniformly, that is to say, at the same speed and at the same angle to a radius extending from said interface to the centre of the outlet zone.

3,827,298

ELECTROMAGNETIC FLOW METER

Isamu Kawamata; Mitsuo Ai, both of Katsuta, and Ichiya Satoh, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Oct. 26, 1972, Ser. No. 300,890
Claims priority, application Japan, Oct. 29, 1971, 46-85505
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 EM 9 Claims



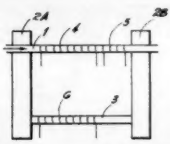
An electromagnetic flow meter utilizing Faraday's law is disclosed. The flow meter transmitter has a magnetic field forming means including a core, which is a cast core made of a ferromagnetic material containing silicon.

3,827,299

ELECTRICAL FLOW-METERS

John Michael Welland, Helmel Hempstead, England, assignor to Perkin Elmer Limited, Beaconsfield, Buckinghamshire, England

Filed June 9, 1972, Ser. No. 261,445
Claims priority, application Great Britain, June 9, 1971, 19596/71
Int. Cl. G01f *1/00*
U.S. Cl. 73—204 10 Claims



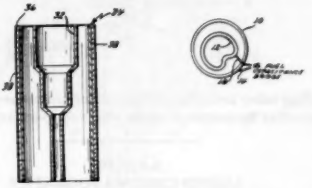
An electrical fluid flow-meter of the type in which the flow rate is measured by means of a uniformly heated thin-walled measuring tube of good thermal conductivity having at each of its ends a member acting as a heat sink. To avoid the non-linearity or distortion in readout of previous flow-meters at high flow rates, a single primary heating and sensing device surrounding a substantial length first portion of the tube immediately downstream of the upstream end of the tube is used which responds to the temperature gradient changes at the upstream end of the measuring tube when a fluid flows through the tube. The downstream end of the primary heating and sensing device is immediately followed by a compensating heating means to maintain this downstream end of the sensor at a constant temperature level even for the highest flow rates which the flow-meter is designed to measure. This isolates the sensor from the temperature gradient near the downstream end of the measuring tube, which is not symmetrical to the gradient near the upstream end of the tube at relatively high flow rates, thereby yielding an almost perfectly linear output of the sensor relative to the flow rate being measured.

3,827,300

LEVEL SENSING DEVICE WITH CAPACITIVE GAGING TRANSDUCER

Sherwood S. Thaler, 45 Circle Rd., Lexington, Mass. 02173

Continuation of Ser. No. 59,965, July 31, 1970, abandoned.
This application Jan. 12, 1973, Ser. No. 323,023
Int. Cl. G01r *23/26*; H01g *5/20*
U.S. Cl. 73—304 C 14 Claims



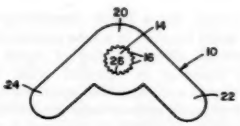
A fuel level measuring system with gaging transducers in the form of probes having an outer, capacitive element and an inner, profiled element which may be continuous, representing an infinite number of capacitive plates, or divided into discrete plates whereby a single probe, operating as a three dimensional probe, performs the function of a multiplicity of probes for various attitudes of a vehicle. An attitude-responsive switch may be used to selectively energize distinct plates of the element.

3,827,301

FIN COOLED TEMPERATURE SENSOR EMPLOYING LIQUID CRYSTALS

Robert Parker, Danville, Calif., assignor to Robert Parker Research, Inc., Livermore, Calif.

Filed Sept. 18, 1972, Ser. No. 290,199
Int. Cl. G01k *11/16*
U.S. Cl. 73—356 8 Claims



An apparatus is provided for indicating the temperature of a surface or heat source by employing a single liquid crystal composition which is at varying distances from the surface. A first means is provided for heat exchanging with said surface. A second means is provided for heat exchanging with the ambient environment, with the first and second means in heat exchanging relationship. At least a portion of said second means is coated with a liquid crystal composition extending away from said first means. The apparatus is useful in combination with appliances or apparatii which are at elevated temperatures, particularly those which reach temperatures in excess of that which burns the skin, such as wood burning tools, soldering irons, electric ranges, conduits for high temperature fluids, and the like.

3,827,302

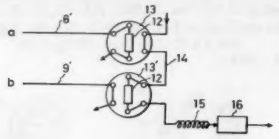
APPARATUS FOR SELECTIVELY SAMPLING FLUIDS

Atsushi Sato, Yokohama, Japan, assignor to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1972, Ser. No. 227,868
Int. Cl. G01n *1/22*
U.S. Cl. 73—422 GC 2 Claims

A selective fluid-sampling apparatus for use in connection with fluid analyzers, which apparatus operates without mixing

or contamination of one sample by another. In this apparatus each sample conduit is connected directly and in parallel to a

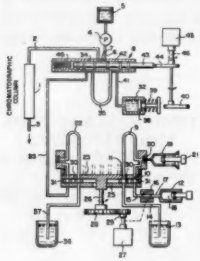


sampling valve and all sampling valves are series-connected to one another by means of a pipe which supplies a carrier gas.

3,827,303
LIQUID CHROMATOGRAPHY

Masaru Shiina, Katsuta, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed Dec. 1, 1971, Ser. No. 203,799
Claims priority, application Japan, Dec. 16, 1970, 45-111796
Int. Cl. G01n *1/00*
U.S. Cl. 73—422 GC **7 Claims**



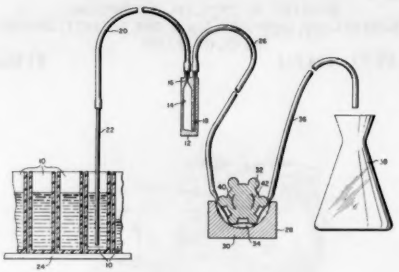
A liquid sample for a liquid chromatography testing is prepared by being injected in a tube containing development liquid to form an elongated slug of liquid sample having development liquid at its opposite ends. Thereafter, the development liquid with the intermediate sample slug is transferred to a chromatographic column for testing, so that only a very small quantity of sample is employed correlated to only the exact needs of the chromatographic column. The sample slug is injected by a hypodermic needle passing through an elastomeric plug, so that the hole made by the hypodermic needle is thereafter elastically sealed as the needle is withdrawn. A transfer valve will selectively connect a reservoir and suction device to the sample holding tube, and the pump and chromatographic column with the sample holding tube to in the first instance prepare the sample holding tube for injection of the sample and in the second instance to transfer the development fluid and injected sample to the chromatographic column. A plurality of such sample holding tubes may be connected by valve means for selective feeding to the chromatographic column.

3,827,304
SAMPLE HANDLING METHOD

Eric Marteau D'Autry, Villiers-Le-Bel, France, assignor to Warren E. Gilson, Madison, Wis.

Filed June 26, 1972, Ser. No. 266,327
Claims priority, application France, July 20, 1971, 71.26580
Int. Cl. G01n *1/14*
U.S. Cl. 73—425.6 **10 Claims**

A pipette is coupled to the top of a flow through analysis vessel, and the bottom of the vessel is connected by a conduit to a pump. The pipette is placed into a series of liquid samples. For each sample, the pump pulls a quantity of liquid through

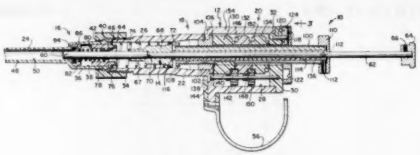


the vessel and into the conduit. The pump is then reversed to return a portion of the sample to the vessel for analysis. After analysis, the sample is moved through the pump to a drain.

3,827,305
ADJUSTABLE PIPETTE

Warren E. Gilson, 4801 Sheboygan Ave., and Robert E. Gilson, 4 Franklin Ave., both of Madison, Wis. 53705

Filed Oct. 24, 1972, Ser. No. 300,215
Int. Cl. G01n *1/14*
U.S. Cl. 73—425.6 **11 Claims**



An adjustable pipette includes an elongated body defining a barrel portion and a plunger cavity. A plunger unit is mounted for reciprocation in the body and includes a plunger portion extending from the barrel portion into the plunger cavity, and further includes an operating portion extending rearwardly out of the body. The plunger unit includes a stop disposed within the barrel portion, and an adjustable rear stop for varying the volume of a pipetted sample is carried on a threaded shaft received in a nut fixed in the body. An indicator including rotatable indicia-carrying rings is coupled to the shaft for providing an indication of the volume setting of the pipette. A forward stop for movement of the plunger unit is provided by an overtravel member engaged by the plunger stop member. Travel of the plunger unit past the forward position compresses an overtravel spring, and a seal assembly is compressed by the overtravel spring into sealing engagement with the plunger portion of the plunger unit. A sleeve carried within the threaded shaft around the operating portion of the plunger unit is adjustable relative to the shaft in order to align the indicator relative to the shaft. A lock arrangement is provided for locking the shaft in position to prevent inadvertent misadjustment of the volume.

3,827,306

SOFT WALL HYDROMETER

Homer S. Youngs, 8718 Dunway Dr., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 868,564, Oct. 22, 1969, Pat. No. 3,604,272, which is a continuation-in-part of Ser. No. 583,244, Sept. 30, 1966, abandoned. This application July 19, 1971, Ser. No. 163,922

Int. Cl. G01n 9/14

U.S. Cl. 73—450 8 Claims

A specific gravity sensing instrument in which a closed cell having, at least in part, highly compliant walls is completely filled with either a reference liquid, and is completely immersed in a sample liquid to be measured, or conversely the cell is completely filled with the sample liquid and completely immersed in the reference liquid, in either case the specific gravity of the sample liquid is determined by the buoyancy of the cell.

3,827,307

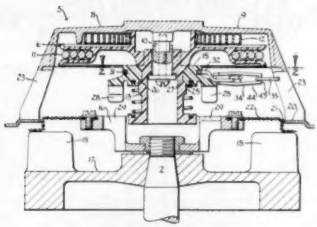
DRAG DEVICE FOR BENDIX-TYPE ROPE STARTERS

Robert Couchman, Jr., Menomonee Falls, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed July 12, 1973, Ser. No. 378,435

Int. Cl. F02n 3/02; F16d 41/00

U.S. Cl. 74—6 6 Claims



A drag device for retarding rotation of the driving clutch element of a Bendix-type engine starter comprises a friction member having jaw portions embracing said clutch element under converging bias and jaw actuating arm portions projecting radially to one side of said element. An elongated friction relieving element has at one end a highly eccentric cam lengthwise confined between the jaw actuating arms. Its other end is confined against orbital motion about the clutch axis. Orbital motion of the arms due to excessive friction angularly displaces the friction relieving member to cam the arms apart, thus diverging the jaws to relieve friction.

3,827,308

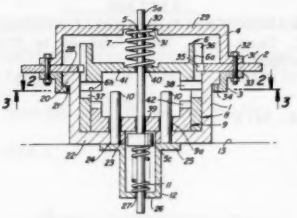
PRECISION ROTARY INDEX

David E. Brown, 686 Irvine Dr., Erie, Pa. 16511

Filed Jan. 16, 1973, Ser. No. 324,171

Int. Cl. F16h 27/02

U.S. Cl. 74—88 25 Claims



A mechanism is disclosed for converting axial input motion or reciprocating motion of an input member to a precise unidirectional incremental angular displacement of an output member about the axis of the mechanism to achieve a predetermined amount of angular motion. This predetermined amount of angular motion results for each input reciprocation. This is achieved by using a set of three cooperating cams—one stationary locator cam and two moving cams: one drive cam moving axially and one output cam moving both axially and angularly; a spline or other axially movable angular driving device is used for subtracting the axial movement from the motion of the output cam to yield a purely rotary motion.

3,827,309

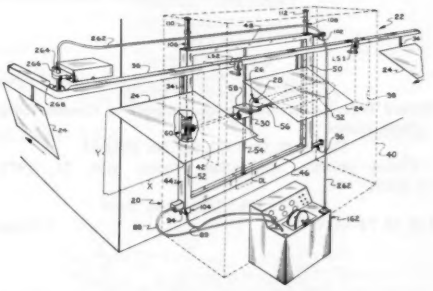
MANIPULATING MECHANISM

Richard A. Dooley, 400 S. We twood Ave., Toledo, Ohio 43609

Filed Mar. 14, 1973, Ser. No. 341,133

Int. Cl. F16h 21/44

U.S. Cl. 74—110 34 Claims



Apparatus for manipulating a tool through predetermined motions is provided. The apparatus includes a rectangular frame with mutually perpendicular supporting rods extending between opposite frame members. A mounting carriage is slidably mounted on crossing portions of the rods with the tool, e.g., a spray gun, mounted thereon. A conveyor carrying products to be painted is located adjacent the frame with the spray gun automatically painting the products carried on the conveyor. Rack and pinion mechanisms are carried by the frame members for independently moving the two supporting rods in mutually perpendicular directions so that the spray gun on the carriage can be manipulated in any predetermined pattern. The rack and pinion mechanisms are operated through hydraulic boosters by flexible cables. The cables, in turn, are controlled through additional rack and pinion mechanisms of

which movable racks are controlled through cam and follower mechanism. The stationary rack of one of the latter rack and pinion mechanisms can be moved in accordance with the conveyor speed to coordinate movement of the spray gun with movement of the products on the conveyor.

3,827,310

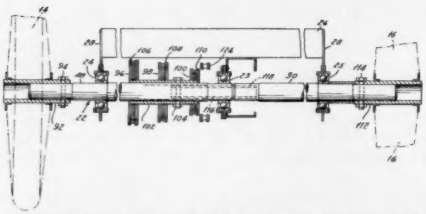
TRANSMISSION FOR WHEELED VEHICLE

Donald C. Gates, Troy, Mich., assignor to EVI, Sterling Heights, Mich.

Filed Dec. 29, 1972, Ser. No. 319,640

Int. Cl. F16h *9/04*

U.S. Cl. 74—217 S **9 Claims**



A transmission for a pedal-driven vehicle. The transmission sprockets are rotatably mounted on a tubular shaft and are individually engaged by ratchet assemblies on the shaft. The ratchet assemblies are operated by a transmission shift rod axially slidably mounted in the shaft. The pedal drive is a dual system having pedals for each of two passengers to drive the tubular shaft. Over-running clutches associated with each set of pedals permits one passenger to hold his pedals stationary while the other passenger pedals.

ERRATUM

For Class 74—363 see:
Patent No. 3,827,276

3,827,311

OSCILLATABLE PINION

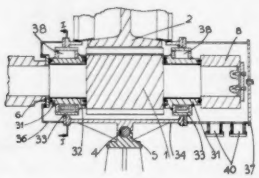
Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Sept. 11, 1972, Ser. No. 288,065

Claims priority, application France, Sept. 21, 1971, 71.33851

Int. Cl. F16h *57/00;* **F16n** *39/00*

U.S. Cl. 74—410 **2 Claims**



An oscillatable pinion which has a pair of journals each reached by a half bearing, the half bearings being supported in a bearing body carried on a hinge pin whose axis is transverse to the axis of the bearing and perpendicular to the normal force of one of the gears in relation to the other.

3,827,312

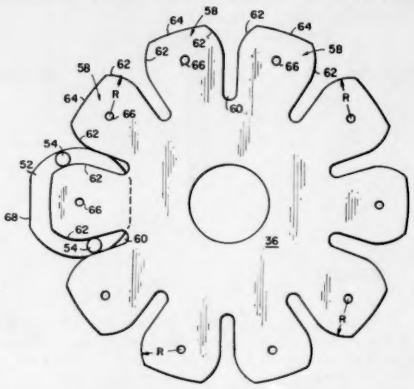
INDEXING MECHANISM FOR A COLLATING AND COLLECTING APPARATUS

Thomas R. Bristol, Redwood City; Harold Lakin, Portola Valley, and Fred L. Renga, Sunnyvale, all of Calif., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Division of Ser. No. 58,938, July 28, 1970, Pat. No. 3,674,142. This application June 30, 1972, Ser. No. 281,370

Int. Cl. F16h *27/04*

U.S. Cl. 74—436 **2 Claims**



An indexing drive mechanism for collating and collecting apparatus in which a plurality of receiving bins are arranged in a helical array on a vertically movable platform. The indexing mechanism is related to the well-known "Geneva" type drive but it is so constructed that the drive is fully positive whether the direction is clockwise or counterclockwise and further the construction of the indexing mechanism is such that there are no vertically no alignment problems during assembly.

3,827,313

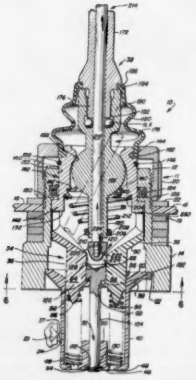
MINIATURIZED JOYSTICK AND CAM STRUCTURE WITH PUSH BUTTON SWITCH OPERATING MEANS

Rudolf H. Kiessling, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Jan. 24, 1973, Ser. No. 326,224

Int. Cl. G05g *9/00;* **H01h** *25/04*

U.S. Cl. 74—471 XY **6 Claims**



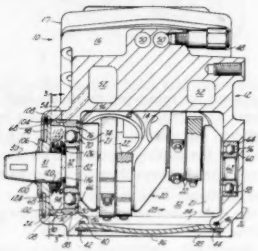
A switching mechanism has an operating arm pivotably movable in selected directions about an intermediate pivot

point and the arm drives at least one camming member for operating a second cam in a cam-actuated self-restoring contact module. Mechanisms are provided for momentary or maintained switching operations for up to nine positions for four contact modules, for mastered control of a fifth contact module in each position, and for a latched central position.

3,827,314
COMPRESSOR CONSTRUCTION

Duane F. Steele, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumeh, Mich.

Filed Feb. 5, 1973, Ser. No. 329,632
Int. Cl. F16h *57/02*
U.S. Cl. 74—606 **22 Claims**

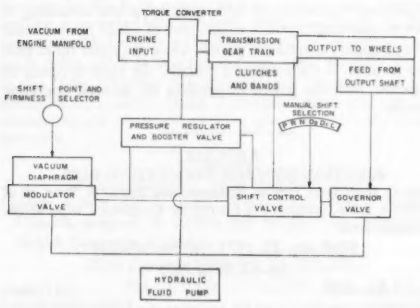


A reciprocating piston type gas pump with a crankshaft assembled into a crankcase thereof through an opening in the front wall of the crankcase. The crankshaft is journaled in the crankcase by a pair of bearings one of which is received in a blind pocket in the rear wall of the crankcase and the other is received in the opening of the front wall thereof. A drive shaft integral with the crankshaft extends through the opening. A cover plate is received in the opening over the drive shaft and is spaced from the front bearing by a sleeve which controls within close tolerances the working height of a seal interposed between the bearing and the cover plate to prevent fluids from escaping from the crankcase between the drive shaft and the cover plate.

3,827,315
AUTOMATIC TRANSMISSION SHIFTING POINT AND FIRMNESS VARIATION CONTROL

Joseph Paul Lupo, 116 Burda Ln., New City, N.Y. 10956

Filed Jan. 23, 1973, Ser. No. 326,053
Int. Cl. B60k
U.S. Cl. 74—863 **4 Claims**

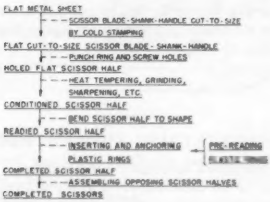


A method and system providing variable vehicle operator control of the shift points and shifting firmness of a stock automatic transmission to obtain high-performance shifting without mechanical modification of the transmission by intercepting the transmission input torque signal to the transmission hydraulic control system and modifying it to be unrepresentative of actual vehicle engine torque and carburetor opening. Particular suitability is achieved with automatic transmissions having an engine vacuum signal responsive modulator valve.

3,827,316
METHOD OF PRODUCING NEW SCISSORS

Italo Marco Levi Laurenti, 432 Park Ave., South, New York, N.Y. 10016

Filed July 16, 1973, Ser. No. 379,585
Int. Cl. B21k *11/06*
U.S. Cl. 76—104 A **6 Claims**

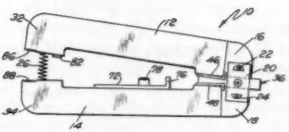


In a preferred embodiment, a process, and resulting scissors product, including cold-stanping each of the commonly shank-pivoted opposing blade-shank-handle strips from sheet-steel and bending at least one of the strips between the shank and handle portions thereof, and after cutting-out a ring-plug from each handle to thereby form the scissor rings, for each ring inserting from opposite top and bottom faces of the ring opposing abuttable inserts each insert having a laterally outwardly extending flange which overhangs the respective ring's upper or lower surface — as the case may be — such that upon subsequent securing-together thereof of the opposing inserts the ring is vise-clamped therebetween.

3,827,317
WIRE STRIPPER

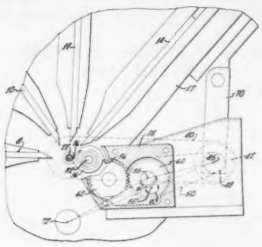
Joseph Perrino, Ash St., Rehoboth, Mass. 02769

Filed Dec. 18, 1972, Ser. No. 316,382
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 B **10 Claims**



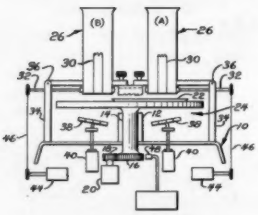
A device for stripping insulation from the end of a wire having elongated pivotal grip members between which a tubular member extends. The wire projects through the tubular member for engagement with a stop gauge and opposed cutting elements envelop the tubular member and are movable by the grip members in a cutting operation to penetrate the insulation of the wire, whereafter the end portion of the insulation as located between the stop gauge, and the penetrated section is stripped from the wire. The cutting elements and tubular element are replaceable in accordance with the requirements of use.

3,827,318
AUTOMATIC LATHE WITH ROTARY CUTTER
Jess Frank Sorenson, Yucaipa, Calif., assignor to Sorenson Engineering, Inc., Yucaipa, Calif.
Filed Mar. 23, 1972, Ser. No. 237,487
Int. Cl. B23b *1/00, 25/00*
U.S. Cl. 82—1 C **12 Claims**



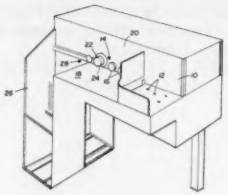
A sliding headstock automatic lathe includes a cutting tool which rotates in the same direction as the workpiece and at a speed precisely twice that of the workpiece, resulting in two or more flat cuts on the workpiece. The cutting tool is driven from the lathe spindle nose by a drive train which accommodates the relative longitudinal movement of the spindle nose and lateral movement of the cutting tool without slippage.

3,827,319
WEIGHT CONTROLLED SLICING SYSTEM
Keith E. Flesch, Garrett, Ind., assignor to Peter Eckrich & Sons, Inc., Fort Wayne, Ind.
Filed June 20, 1973, Ser. No. 372,466
Int. Cl. B26d *4/56*
U.S. Cl. 83—73 **6 Claims**



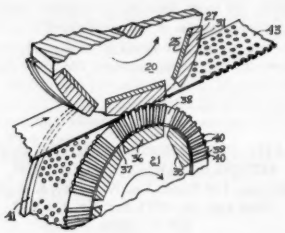
A weight controlled slicing system for simultaneously and accurately, independently cutting slices from plural loaves in such a way as to minimize give-away. The slicing system includes a single knife and plural means for simultaneously feeding plural loaves toward the knife in a cutting area. Plural slice receivers, each associated with a weight cell, are adapted to receive the slices from the respective loaves as they are cut and signal a control system that controls the feed rate of each feeding means in accordance with the slices cut in a desired package weight. To minimize the number of components required, the various control functions relative to each weigh cell are multiplexed.

3,827,320
AIR EXHAUST SYSTEM FOR WASTE MATERIAL
James D. Parks, Iowa City, Iowa, assignor to Westinghouse Learning Corporation, Iowa City, Iowa
Filed Feb. 16, 1973, Ser. No. 332,813
Int. Cl. B26d *7/06*
U.S. Cl. 83—100 **7 Claims**



An exhaust system for removing relatively stiff waste strips of paper cut from a thick document or booklet by a continuous cutting wheel. Air under pressure is injected into a discharge tube near the cutting wheel to draw the waste strips into the tube and convey them through the tube to a point of discharge. The discharge tube is oriented in the direction of movement of the document to minimize jamming because of the stiffness of the waste strips being handled.

3,827,321
ROTATABLE RESILIENT PUNCH AND DIE CUTTER APPARATUS
Erich Bley, 690 Greenleaf, Elk Grove, Ill. 60007
Filed June 25, 1973, Ser. No. 373,156
Int. Cl. B26f *1/08*
U.S. Cl. 83—117 **8 Claims**

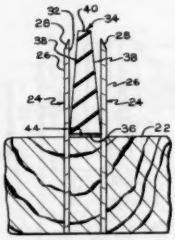


A perforating, cutting, or embossing apparatus consisting of a pair of coacting rotatable rollers, one of which has mounted on its periphery a urethane punch, while the other roller provides an anvil in the form of a metallic die plate designed to cooperate with the punch to perform the desired operating function.

3,827,322
EJECTION MEMBER FOR CUTTING DIES
Philip G. Saunders; Jack R. Simpson, and Daniel R. Peer, all of Toledo, Ohio, assignors to Container Graphics Corporation, Toledo, Ohio
Filed Aug. 23, 1972, Ser. No. 283,219
Int. Cl. B26d *7/06*
U.S. Cl. 83—128 **13 Claims**

A resilient ejection strip for a cutting die is provided. In the production of carton blanks and the like from sheet material, such as corrugated board, slots and various other openings are frequently made in the blanks. The pieces of sheet material from which the openings are made must be ejected from the cutting dies after forming, or the dies will not be operable after

several blanks are produced. A resilient ejection strip is located in a cavity or recess formed by the cutting rules to eject the severed pieces of sheet material. The ejection strip is tapered in cross section so that it cannot completely fill the



cavity formed by the cutting rules and cause damage because of a lack of space to expand. The new ejection strip also has a bottom surface which is rough or textured to provide a larger surface area for the purpose of adhering the ejection strip to the die board.

3,827,323

OVERHUNG SHEAR

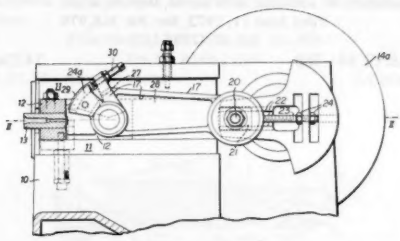
Klaus Jacobs, Cologne-Raderthal, Germany, assignor to Meyer, Roth & Pastor, Cologne-Raderberg, Germany

Filed Aug. 20, 1968, Ser. No. 753,998

Claims priority, application Germany, Aug. 23, 1968, 1627233

Int. Cl. B23d *25/02*

U.S. Cl. 83—310 **7 Claims**



An overhung or flying shear for cutting wire or band sections or the like from moving articles, such as rods, bands or the like, is provided with a slide for the cutting chuck, the slide being movable parallel to the direction of this movement by a crank drive which actuates at the same time the knife guided by the slide, the shear being particularly characterized by a transmission member which is directly connected with the connecting rod of the crank drive and which directly moves the knife.

3,827,324

CROWDER ROLL ARM FOR BANDMILL

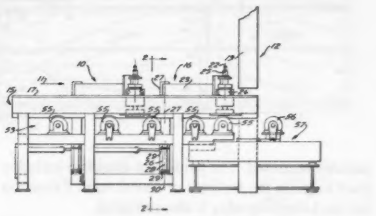
Francis Edwin Allen, North Vancouver, British Columbia, Canada, assignor to Letson and Burpee Ltd., Vancouver, British Columbia, Canada

Filed June 16, 1972, Ser. No. 263,437

Int. Cl. B27b *15/08, 25/02*

U.S. Cl. 83—425.2 **10 Claims**

Crowder roll assembly for use with infeed conveyor and fixed line bar of setting bandmill. To change sawn cant width, bandmill sets to line bar which remains stationary. Bandmill cuts cant fed through saw, sawn datum face of cant being pressed against line bar by crowder roll to maintain axial feed parallel to line bar. Contact strip between roll and cant is longitudinally separated from saw by overhang length. Roll is journalled on arm hinged at one end to permit rotation of arm to accommodate cants of different widths. Hinge axis posi-



tioned relative to line bar so that overhang length for cant of minimum width is less than overhang length for cant of maximum width providing improved support to reduce chatter when cutting narrow cants.

3,827,325

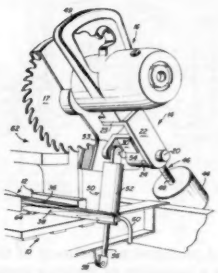
TRIM SAW MOUNTING BRACKET ASSEMBLY

Robert L. Ward, and Willie M. Welch, both of Shreveport, La., assignors to Gang-Nail Truss Company of Shreveport, Inc., Shreveport, La., a part interest

Filed Apr. 4, 1972, Ser. No. 240,368

Int. Cl. B27b *5/04*

U.S. Cl. 83—461 **3 Claims**



A bracket assembly for mounting a saw on a truss fabricating press has a bearing sleeve, and a shaft forming a journal arranged in the sleeve and connected to a longitudinally extending member adapted for moutning a saw. The pivotal mounting of the longitudinally extending member permits the performance of trimming operations on chords of bowstring trusses positioned on the press. The lower chord is first positioned and trimmed, followed by the upper chord. A stop is arranged on the shaft for rotation therewith to limit the swing of the longitudinally extending member toward the press. A counterweight may also be attached to the longitudinally extending member for balancing the weight of the saw. A fluid motor or the like may be arranged between and connected to the frame of the press and the longitudinally extending member for selectively swinging the saw toward and away from the chords.

3,827,326

TABLE FOR USE WITH TRAVERSE POWER TOOL

Gilbert E. Martin, 5139 Grandy Ave., Detroit, Mich. 48211

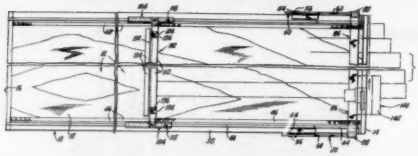
Filed Apr. 2, 1973, Ser. No. 347,224

Int. Cl. B27b *27/02, 5/18;* **B27c** *5/04*

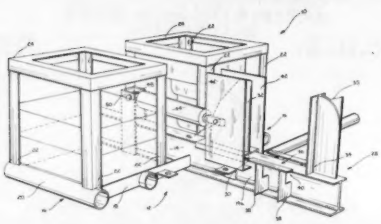
U.S. Cl. 83—468 **6 Claims**

A table has a flat surface to support one or more workpiece articles in such fashion as to provide for uniform cutting or

shaping operations thereon. The table has side guide rails to which a backstop assembly and a swing arm assembly are adjustably mounted. The swing arm assembly includes a crossbar used to guide the traverse of a work tool. Extension means for the backstop assembly is also provided.



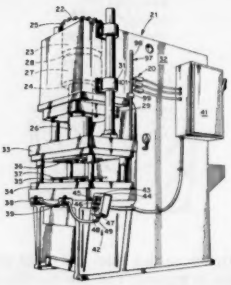
3,827,327
LOG CUTTING APPARATUS FOR CUTTING LOGS INTO SELECTED LENGTHS
Amos F. Davis, Rt. 1, Box 86, Seven Springs, N.C.
Filed Oct. 30, 1972, Ser. No. 301,946
Int. Cl. B26d *7/28, 5/12*
U.S. Cl. 83—522 **15 Claims**



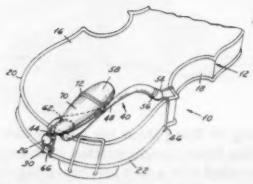
In abstract, a preferred embodiment of the present invention comprises a logcutting or shearing apparatus adapted to cut logs into selected lengths. More particularly, the log cutting apparatus of the present invention is of the shear type and, accordingly, includes a horizontally reciprocally mounted shearing blade cooperable with a stationary shearing back to receive logs therebetween and to shear the same into preselected lengths by reciprocating the shearing blade back and forth relative to the cooperative shearing back. To appraise the operator of the length of logs being cut, the present invention provides a visual log length indicator with length markers thereon that extend outwardly from the log cutting apparatus and is particularly oriented so as to extend generally perpendicular to the plane of the shearing blade.

3,827,328
CONTROL SYSTEM FOR HYDRAULIC PRESSES
Philip A. LaFlamme, and Romeo E. Couture, both of Nashua, N.H., assignors to Greenerd Press & Machine Company, Inc., Nashua, N.H.
Filed Dec. 26, 1972, Ser. No. 318,545
Int. Cl. B26d *5/12*
U.S. Cl. 83—617 **7 Claims**

A hydraulic press is free of the conventional, four-way, drum-type, directional control valve and substitutes a plurality of relatively small, commercially-available, solenoid-actuated, pressure relief valves. High speed cycling is obtained with a large volume, low pressure pump paired with a small volume, high pressure pump, the latter valved out of the pressure line upon work-piece contact. The high pressure pump performs the work-piece penetration stroke, but is valved off to relieve pressure in the head end of the cylinder just before breakthrough of the work-piece to prevent shock to the press.



3,827,329
UNIVERSAL SHOULDER REST FOR VIOLINS AND VIOLAS OF ALL SIZES
Domenico M. Annessa, 3536 Burns, Detroit, Mich.
Filed June 11, 1973, Ser. No. 368,979
Int. Cl. G10d *1/02*
U.S. Cl. 84—280 **14 Claims**

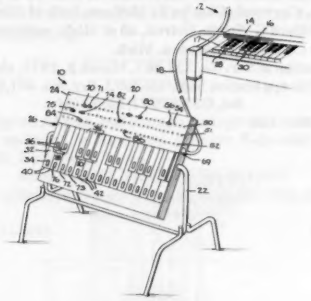


The universal shoulder rest or shoulder rest appliance is for bowed string musical instruments such as violins and violas. The appliance includes a unitary structure mounted on the back of the instrument box and having an elongated arm and a plate connected to the base of the arm. The plate extends beneath the arm and diverges therefrom throughout its length. The base, located at one end of the arm, is provided with a groove and the other end of the arm is provided with a foot having a groove. The groove on the base interfits with the lower ridge of the instrument back beneath the end pin thereon. The intermediate portion of the arm between the ends thereof is curved to provide space between the intermediate portion of the arm and the back of the instrument box when the appliance is applied to the instrument. The back surface of the plate is adapted to engage a person's shoulder to rest the instrument thereon. Yieldable means are provided in the grooves at the ends of the arm for connecting the structure to violins and violas of all sizes.

3,827,330
MUSIC TEACHING DEVICE

Daniel Ward, 150 W. Eckerson Rd., Spring Valley, N.Y. 10977

Filed Apr. 11, 1973, Ser. No. 349,917
Int. Cl. G10b *15/02*
U.S. Cl. 84—472 **13 Claims**

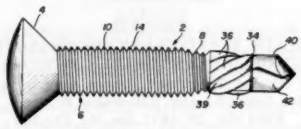


This invention relates to music teaching devices and, more particularly, to a manipulative and audio-visual music education aid which provides novel tactile and audio-visual demonstration of musical concepts.

3,827,331
SELF-EXTRUDING SCREW

Herman G. Muenchinger, South Dartmouth, Mass., assignor to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Filed Nov. 1, 1972, Ser. No. 302,886
Int. Cl. F16b *25/00*
U.S. Cl. 85—41 **6 Claims**



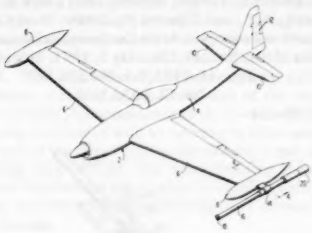
A self-extruding screw comprises a shank with a thread-forming section and a lead section. The thread-forming section may be of arcuate polygonal cross-section. A lead section is adjacent to the thread-forming section and has ribs that are helically disposed opposite to the helix of the thread of the thread-forming section to enlarge, extrude and cold work a pilot hole in a workpiece. The ribs may be eccentric or concentric with respect to the axis of the shank, depending upon whether or not the screw is to be captive with the workpiece. The lead section may also include a drill point to form the pilot hole.

3,827,332
AIRCRAFT HAVING RECOILLESS RIFLE

David B. Lindsay, Jr., 1460 Gulfview Dr., Sarasota, Fla. 79335

Filed Oct. 31, 1972, Ser. No. 302,451
Int. Cl. F41f *3/02*
U.S. Cl. 89—1.7 **4 Claims**

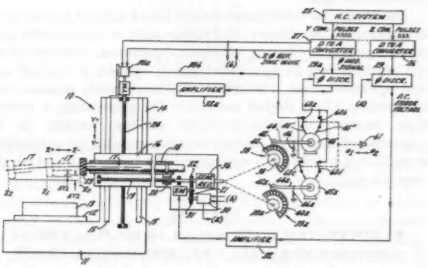
A single-fuselage fixed wing aircraft is provided with a recoilless rifle at the outer portions of the wing. The large caliber recoilless rifle has a rearwardly directed exhaust nozzle which emits a recoil-balancing blast of high velocity propellant gases into an area which is spaced from the tail structure of the aircraft.



3,827,333
GRAVITY SAG COMPENSATION SYSTEM

John E. Hurd, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Del.

Filed June 29, 1973, Ser. No. 375,108
Int. Cl. B23c *1/02, 9/00;* **B23b** *39/08*
U.S. Cl. 90—14 **8 Claims**



In a machine tool having a headstock vertically movable along a Y axis and a spindle horizontally extensible from the headstock along a Z axis, the sag or droop of the extremity of the spindle as a cantilever member will change as the spindle position along the Z axis is changed. A compensating system is here disclosed which senses the Z axis position of the spindle to create a signal varying as a predetermined function of that position to represent the amount of sag for a given weight load on the spindle. That signal is injected into the servo positioning loop for the Y axis to make the positioned height of the headstock correspondingly greater than that designated by a Y axis command, such that the cutter on the spindle extremity ends up at the commanded and desired Y axis position. This substantially eliminates workpiece errors otherwise arising because of spindle drooping under gravity, especially when the sensed spindle is extended by a relatively great amount from its supporting headstock. The sensing and signal producing device is physically adjustable to enable matching of the predetermined function to observed amounts of sag for different weight loads. A plurality of such devices may be pre-adjusted for different weight loads and then selectively switched into the system when each load is actually placed on the spindle.

3,827,334

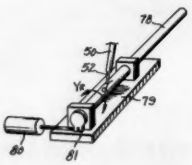
NUMERICALLY CONTROLLED ENGRAVING MACHINE SYSTEM

Myrle H. English, West Chester, Pa.; Laurence Goodstal, Ilion, N.Y.; Wayne E. Leek, Mohawk, N.Y.; Robert J. Sanzo, Ilion, N.Y.; Robert L. Turner, Newark, Del.; Clark B. Workman, Mohawk, N.Y., and Edward W. Yetter, West Chester, Pa., assignors to Remington Arms Company, Bridgeport, Conn.

Division of Ser. No. 141,136, May 7, 1971. This application June 15, 1973, Ser. No. 370,542

Int. Cl. B23d *5/04*

U.S. Cl. 90—34 **24 Claims**



A system for automatic simulation by computerized machinery of a hand-engraved pattern in a workpiece. The present system, while concerned primarily in the simulation of engraving patterns by a machine process, nonetheless is applicable to the generation or regeneration of a variety of intricate patterns. In such respect, the process may be useful in copying decorative patterns for printed cards, reproducing of contour maps, and a myriad of other purposes involving the simulation of contours or of a pattern of lines existing in multi-dimensional space.

The invention introduces several novel aspects to the art of computerized machinery, and particularly to numerically controlled machinery having multi-axis operation, with one of the major objectives being a reduction of volume of control tape and operation time. The present system usually involves two computers: (1) a digital computer for generating a control tape numerically representative of the pattern to be reproduced; and (2) a digital control computer for controlling a multi-axis machine to regenerate the pattern stored on the control tape.

3,827,335

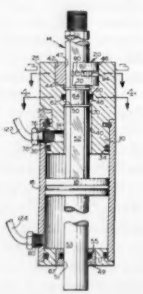
FLUID SYSTEM WITH ANGULAR DISPLACEMENT SENSOR FOR AXIALLY RECIPROCATING SHAFT

Herbert J. Lewis, Hudson Falls, and William H. Ziegler, Waterford, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 249,334, May 1, 1972, abandoned. This application July 10, 1973, Ser. No. 377,989

Int. Cl. F15b *13/042, 11/08*

U.S. Cl. 91—3 **5 Claims**



The angular displacement of an axially reciprocating shaft is sensed by a fluid actuated sensor which generates signals responsive to the angular displacement and transmits them to a proportional fluidic amplifier which divides a controlled fluid flow proportional to the signals and directs the proportionally divided flows to a fluid responsive device.

3,827,336

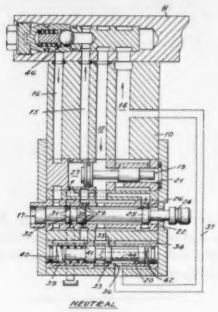
TRACTOR HYDRAULIC LIFT CONTROL VALVE

James A. Caywood; Charles E. McKeon, both of Birmingham, and Willard G. Smith, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 232,807, March 8, 1973, abandoned. This application Sept. 26, 1973, Ser. No. 401,020

Int. Cl. F15b *11/08, 13/04*

U.S. Cl. 91—446 **2 Claims**



An automotive flow control valve for a tractor hydraulic lift system regulates the flow from a fixed displacement pump to a lift cylinder in accordance with the degree of movement of the control valve so that the rapidity of response to a signaled lift of the tractor hitch is generally in proportion to the amplitude of the lift signal. Upon flow to the hydraulic lift cylinder dropping to a predetermined small part of pump output, an unload valve diverts pump flow to sump.

3,827,337

HYDROSTATIC BEARINGS FOR THE SWASH PLATE OF A BARREL-CYLINDER HYDRAULIC PUMP OR MOTOR

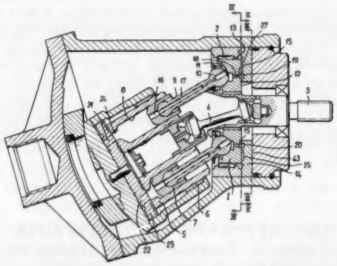
Francois C. Pruvot, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

Filed Mar. 29, 1972, Ser. No. 239,290

Claims priority, application France, Apr. 28, 1971, 71.15146

Int. Cl. F01b *13/04*

U.S. Cl. 91—489 **4 Claims**



This hydrostatic bearing for the swash plate of a hydraulic high-pressure and cylinder barrel machine is formed on a face of a bearing plate which registers with one face of a swash

plate, and comprises a main bearing consisting of a set of two arcuate grooves surrounded by sealing surfaces and disposed in proper phase relationship to ports formed in the fluid distributor plate, and another set of grooves in the other face of said swash plate, identical in number to that of distributor orifices formed at the end of the barrel cylinders, said bearing further comprising at least three auxiliary hydrostatic bearings consisting of cavities formed in the other face of said bearing plate, said last-named cavities being concentric to the grooves of said main bearing.

3,827,338

FLUID DEVICE

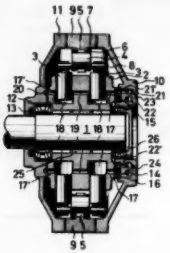
Hiroshi Oguni, Akashi, and Masaya Nakagawa, Osaka, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Kyogo-ken, Japan

Filed Aug. 23, 1971, Ser. No. 174,097

Claims priority, application Japan, Aug. 25, 1970, 45-73850

Int. Cl. F01b *1/06*

U.S. Cl. 91—491 **9 Claims**



This invention relates to fluid devices of the radial piston type providing eccentric rollers, eccentric pinions or cams of elliptic or any shape as desired which are mounted on the piston pins for increasing the number of piston strokes and producing a high output power with small capacity.

3,827,339

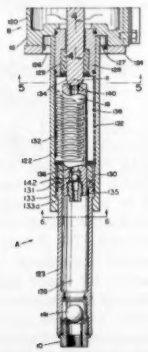
DOUBLE ACTING HYDRAULIC PUMP

Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 809,235, March 21, 1969. This application May 17, 1971, Ser. No. 144,055

Int. Cl. F01b *7/00*

U.S. Cl. 92—152 **2 Claims**



A double acting hydraulic pump and air motor therefor including means for controlling the inlet and exhaust of air to and from the opposite sides of the piston in the air cylinder. The pump has a stepped diameter housing including an upper pump cylinder defining an outlet chamber for liquid and a lower pump cylinder received within the upper pump cylinder and defining an inlet chamber for liquid. A pump piston reciprocates in the two cylinders and is slidably received in two axially spaced stationary packing sleeves having a resilient spacer sleeve interposed axially therebetween. The spacer sleeve is formed of metal sheet adapted to deflect resiliently under load. The upper end of the upper pump cylinder is received within a recess in the lower end of the air motor housing. A retainer plate connected to the lower end of the air motor housing is provided with an opening to allow passage of the upper end of the upper pump cylinder and a pair of radially extending ears thereon. The pump housing is rotatable about its own longitudinal axis to align or misalign the ears and the opening and retain the pump housing to or release it from the motor housing.

3,827,340

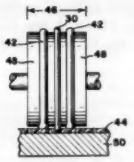
FRACTURABLE ADHESIVE BACKING TOOL

Jerry L. Keck, Chicago, and James Robert Rowley, Calumet Park, both of Ill., assignors to Ludlow Corporation, Needham Heights, Mass.

Division of Ser. No. 169,653, Aug. 6, 1971, Pat. No. 3,719,584. This application Dec. 8, 1972, Ser. No. 313,241

Int. Cl. B31b *1/14*

U.S. Cl. 93—58.1 **1 Claim**



A process and apparatus for selectively compressing paper stock of the type which is used as a protective backing sheet for adhesive-coated systems. The process comprises use of a novel compression tool, the precise characteristics of which depend on the paper stock being utilized. The compression tool comprises a blunt, rotatable, circular, working edge which has a radius of at least 0.02, but preferably at least 0.04 inches in diameter and at least one half of the thickness of the paper being weakend. This tool advantageously comprises the compressing edge, being mounted integrally with a bearing surface which makes pressure control easier and limits penetration of the tool. In the preferred embodiments of the invention, the bearing surface is faced with elastomeric material. Disclosure is also made of a novel release sheet and adhesive sheet assembly which is manufactured utilizing the process and apparatus of the invention.

3,827,341

METHOD OF MAKING A PACKAGE

Leo J. Stage, Roselle Park, N.J., assignor to Arvey Corporation, Chicago, Ill.

Division of Ser. No. 229,981, Feb. 28, 1972. This application Mar. 30, 1973, Ser. No. 346,283

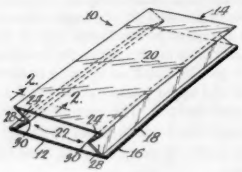
Int. Cl. B31b *49/04*

U.S. Cl. 93—35 R **11 Claims**

A gusset pouch and a method of making the pouch is disclosed. The pouch consists of two webs of material that have coterminous marginal edges with the first web having a width greater than the second web between the marginal edges. The first web has a main body portion substantially the same width as the second web with an interconnecting segment between the main body portion and each of the receptive marginal edges. The two webs are interconnected or adhered to each

other at one end while the segments each have first and second overlapping portions respectively adhered to the first web and to the second web.

The method of making the package or pouch includes folding the first web along spaced fold lines to produce first and second overlapping portions adjacent each marginal edge with



the first fold lines spaced inwardly from the respective marginal edges, positioning a second web adjacent the first web and heat sealing the webs to each other along the exposed portions to produce a gusseted tube. The gusseted tube can then be formed in individual pouches by heat sealing transversely of the webs at longitudinally spaced locations and severing the webs along one edge of the transverse heat seal.

3,827,342

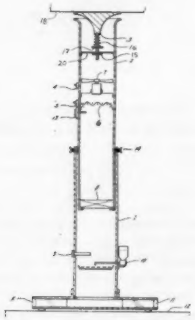
AIR CIRCULATING DEVICE

George W. Hughes, 2601 Mills, Houston, Tex. 77026

Filed Oct. 11, 1973, Ser. No. 405,471

Int. Cl. F24f *13/00*

U.S. Cl. 98—33 **6 Claims**



An air circulating device having telescoping members adjustable vertically, and having means for treating air passing therethrough, and having air intake means in the base thereof and air difusing means at the upper end thereof and air moving means mounted in one of the telescoping members, and having tension means for maintaining the device mounted vertically in a room.

3,827,343

GREASE-COLLECTING HEAT EXCHANGER INSTALLATION

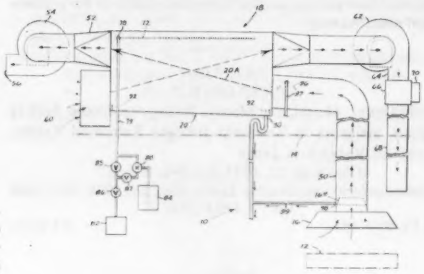
William J. Darm, 5815 S.W. Tucker, Beaverton, Oreg. 97005

Filed May 12, 1972, Ser. No. 252,909

Int. Cl. F28f *3/00*

U.S. Cl. 98—115 **5 Claims**

A heat exchanger with a set of channels through which grease laden air travels. Relatively cool air passes through the heat exchanger in a second set of channels. Washing means including liquid tubes within the first set of channels is provided for washing collected grease from the surfaces defining the first set of channels. A cooking facility including a hood for collecting grease laden air connected to a heat exchanger Relatively cool air from an outside source passes through the heat exchanger to promote the collection of grease in the



exchanges from the grease laden air received from the hood. The air from the outside source is raised in temperature on passing through the exchanger. Such heated air may be used as a source of heat for heating a building enclosure.

3,827,344

APPARATUS FOR THE FAST COOKING, IN HOT WATER, OF DOSED QUANTITIES OF FOODSTUFFS IN GENERAL

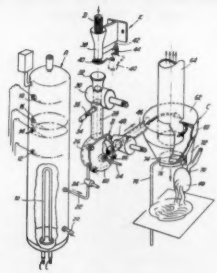
Modesto Pratolongo, Milan, Italy, assignor to Santa Martha Bay Shipping and Trading Co. Ltd., Curacao, Netherlands Antilles

Filed Sept. 18, 1972, Ser. No. 289,941

Claims priority, application Italy, Oct. 9, 1971, 29724/71; Oct. 9, 1971, 29725/71; Oct. 9, 1971, 29726/71

Int. Cl. A47j *19/00, 43/04*

U.S. Cl. 99—352 **11 Claims**



Fast cooking apparatus for dosed quantities of foodstuffs comprises a dosing device for the introduction, into a pressurized cooking chamber a desired quantity of food which is cooked under pressure at temperatures of over 100° C. The cooked food is conveyed, by the pressure within the cooker, into a centrifugal separator, wherein the excess of cooking water and its vapour are removed from the cooked food.

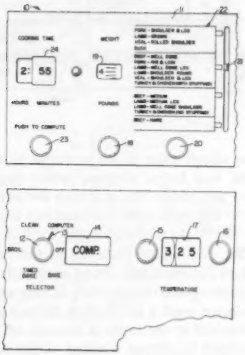
3,827,345
COMPUTER COOKING MEANS

James P. Willson, Garden Grove, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 111,727, Feb. 1, 1971, Pat. No. 3,731,059, which is a continuation-in-part of Ser. No. 47,345, June 18, 1970, abandoned. This application Feb. 20, 1973, Ser. No. 333,669

Int. Cl. A47j *27/00*; G06c *29/00*

U.S. Cl. 99—325 23 Claims



A computer-controller device for controlling the cooking operation of a cooking apparatus, the device having a weight input means for setting the device at a weight setting corresponding to the weight of a meat item to be cooked by the apparatus. The device has a meat doneness input means for setting the device at a doneness setting for a particular meat item. The device has means operatively associated with the input means to cause the cooking apparatus to cook the meat item at a predetermined and substantially constant cooking temperature for a period of time computed in accordance with a cooking time formula based on at least the weight setting of the device and for causing a subsequent reduction in the cooking temperature at a particular point in the time period as computed in accordance with the doneness setting of the device whereby the meat item will be substantially at the doneness of the doneness setting at the termination of the computed cooking time period.

3,827,346
FOOD-TREATMENT APPARATUS WITH GREASE-COLLECTION HOOD FOR AIR CIRCULATOR

Karl Tropp, Werdorf; Wilfried Durth, Burbach-Wahlbach, and Henrich Jakob, Burg, all of Germany, assignors to Berger Eisenwerke Aktiengesellschaft, Herborn, Germany

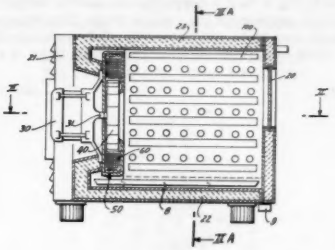
Filed June 8, 1973, Ser. No. 368,117

Claims priority, application Germany, June 15, 1972, 7222326

Int. Cl. A47j *27/00*

U.S. Cl. 99—446 2 Claims

A foodstuff is placed on a rack in a food-treatment apparatus having a chamber. Air in the chamber is drawn in by a blower positioned adjacent a rear wall and is displaced outwardly along the chamber walls past heaters to again reach the foodstuff. The blower is surrounded by means, e.g. a hood, for protecting the oven from grease or fat spatter, and the bottom



of the chamber is provided with a trough for collecting fat dripping from the hood, the racks, baffle plates and other surfaces in the oven.

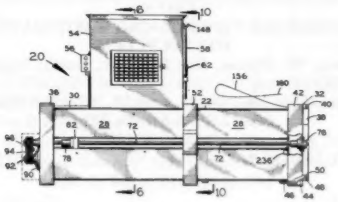
3,827,347
MACHINE FOR CONDITIONING WASTE MATERIAL FOR RECYCLING

Winthrop W. Gilman, 565 16th Ave., South, Naples, Fla. 33940

Division of Ser. No. 248,709, April 28, 1972. This application Feb. 12, 1973, Ser. No. 331,635

Int. Cl. B65b *13/20*

U.S. Cl. 100—8 10 Claims



A machine which bales waste material to condition it for recycling and thus helps alleviate waste disposal problems which lead to pollution. The machine includes a ram which reciprocates to compact waste material in a container and ultimately eject the waste material in the form of a bale. The resistance of the compacted material to the ram is sensed to reverse the ram automatically. In an automatic mode, the ram keeps reciprocating and compacting as long as the input of the machine is loaded until a full bale is formed and ejected. Excess waste material at the input is sheared off. A manipulator is disclosed which facilitates binding of the compacted waste into a bale. Drive means and control means are disclosed. The ram can move all the way to the discharge end of the container or any compacting position short of the discharge end to give uniformity of compaction. The bale weight is fully adjustable.

3,827,348
COMPACTOR WITH SINGLE RING-SUPPORTED BAG

Ransom J. Hennells, Plymouth Township, Wayne County, Mich., assignor to Compactor Company, Inc., Belleville, Mich.

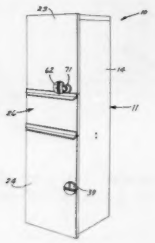
Filed Oct. 16, 1972, Ser. No. 297,823

Int. Cl. B30b *1/08*, *15/30*

U.S. Cl. 100—53 15 Claims

A waste compactor comprising a substantially closed cabinet having an extendible ram assembly mounted adjacent the upper end thereof and means for supporting a disposable

bag under the ram assembly. The cabinet is provided with a door on the lower front side thereof for permitting access to the bag. The bag is supported on a substantially rectangular ring, which ring in turn is supported on suitable ledges formed on the inner surfaces of the cabinet walls. The ledges enable the support ring to be slid outwardly of the cabinet when the door is open to permit interchanging of the bags. A chute is



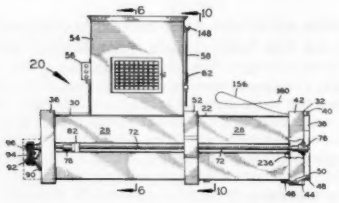
swingably mounted on the cabinet for permitting waste to be deposited into the bag. The chute is movable into a closed position wherein it substantially closes the front wall of the cabinet. The chute, when in the closed position, coacts with the door to prevent opening of same, and also coacts with a safety device to permit energization of the ram assembly. The safety device prevents actuation of the ram assembly when the chute is in its open position.

3,827,349

MACHINE FOR CONDITIONING WASTE MATERIAL FOR RECYCLING

Winthrop W. Gilman, 565 16th Ave., South, Naples, Fla. 33940

Division of Ser. No. 248,709, April 28, 1972. This application Feb. 12, 1973, Ser. No. 331,662
Int. Cl. B30b *15/14*
U.S. Cl. 100—98 R **5 Claims**



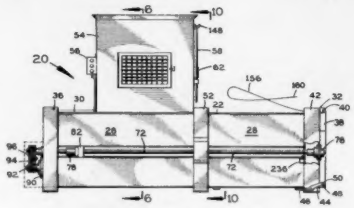
A machine which bales waste material to condition it for recycling and thus helps alleviate waste disposal problems which lead to pollution. The machine includes a ram which reciprocates to compact waste material in a container and ultimately eject the waste material in the form of a bale. The resistance of the compacted material to the ram is sensed to reverse the ram automatically. In an automatic mode, the ram keeps reciprocating and compacting as long as the input of the machine is loaded until a full bale is formed and ejected. Excess waste material at the input is sheared off. A manipulator is disclosed which facilitates binding of the compacted waste into a bale. Drive means and control means are disclosed. The ram can move all the way to the discharge end of the container or any compacting position short of the discharge end to give uniformity of compaction. The bale weight is fully adjustable.

3,827,350

MACHINE FOR CONDITIONING WASTE MATERIAL FOR RECYCLING

Winthrop W. Gilman, 565 16th Ave., South, Naples, Fla. 33940

Filed Apr. 28, 1972, Ser. No. 248,709
Int. Cl. B30b *15/26*
U.S. Cl. 100—52 **5 Claims**



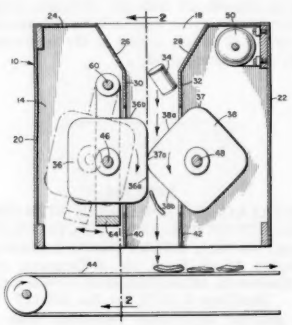
A machine which bales waste material to condition it for recycling and thus helps alleviate waste disposal problems which lead to pollution. The machine includes a ram which reciprocates to compact waste material in a container and ultimately eject the waste material in the form of a bale. The resistance of the compacted material to the ram is sensed to reverse the ram automatically. In an automatic mode, the ram keeps reciprocating and compacting as long as the input of the machine is loaded until a full bale is formed and ejected. Excess waste material at the input is sheared off. A manipulator is disclosed which facilitates binding of the compacted waste into a bale. Drive means and control means are disclosed. The ram can move all the way to the discharge end of the container or any compacting position short of the discharge end to give uniformity of compaction. The bale weight is fully adjustable.

3,827,351

APPARATUS FOR FLATTENING METAL CANS AND CRUSHING GLASS CONTAINERS

William L. Rosenow, Vienna, Va., assignor to Ecology Recycling Inc., Vienna, Va.

Filed Feb. 12, 1973, Ser. No. 331,695
Int. Cl. B30b *3/04, 7/04*
U.S. Cl. 100—176 **3 Claims**



The invention relates to an apparatus for flattening can containers and crushing glass containers. A pair of rollers, having substantially square cross-sections with rounded edges are turned towards each other 45° out of phase by suitable gearing and power means. Cans and bottles are flattend or crushed by

the vise-like action of the flat surfaces of the rollers. One of the rollers is mounted on a spring-biased yoke member to prevent jamming of the apparatus by a foreign non-crushable object which may enter the apparatus.

3,827,352

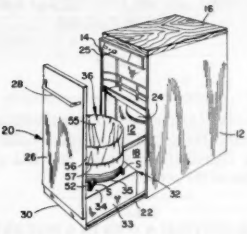
REFUSE COMPACTOR CONTAINER ASSEMBLY

Jerome F. Stratman, Cypress, and John Novak, Anaheim, both of Calif., assignors to The Tappan Company, Mansfield, Ohio

Continuation-in-part of Ser. No. 112,138, Feb. 3, 1971, Pat. No. 3,741,108. This application Nov. 3, 1971, Ser. No. 195,226

Int. Cl. B30b *15/06*

U.S. Cl. 100—229 A 7 Claims



A container assembly is provided on a slide or carriage selectively partially removable from a refuse compactor housing, such container assembly including a lightweight, substantially cylindrical plastic receptacle that may be removed from the slide for either remote withdrawal of compacted refuse or cleaning. A plastic liner is usually disposed within the receptacle and is maintained in such position by a cuff embracingly held or clamped against the external surface thereof by a stretched retaining band.

3,827,353

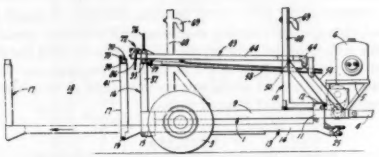
CHRISTMAS TREE BALING MACHINE

Jon Lewis Isberg, Molalla, Oreg., assignor to Yule Tree Farms, Molalla, Oreg.

Filed Apr. 12, 1973, Ser. No. 350,323

Int. Cl. B30b *7/04*

U.S. Cl. 100—232 10 Claims



A machine, for field use on a Christmas tree farm, adapted to support a pallet and embodying mechanism operative to compress a loose-bulk stack of cut Christmas trees into a compact bale on the pallet; the bale then being strapped to said pallet for transport from field to market.

3,827,354

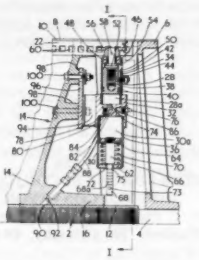
DEVICE FOR LUBRICATION OF HORIZONTAL WINE AND FRUIT PRESSES WITH CYLINDRICAL PRESS BASKET

Heinrich Bredebusch, Erbach/Odenwald, Germany, assignor to Rotary Hoes Limited, West Hordon, Essex, England

Filed Oct. 29, 1972, Ser. No. 301,260

Int. Cl. B30b *1/18, 15/00;* F16n *1/00*

U.S. Cl. 100—289 10 Claims



A horizontal wine and fruit press has a cylindrical pressing chamber and a threaded spindle extending axially through the chamber on which spindle a pressing plate is mounted. The plate is rotatable relative to the spindle and a lubricating device is disposed on the plate for lubricating the threaded opening in the plate. The lubricating device includes a lubricating cylinder and a feed cylinder connected to the lubricating cylinder. The lubricating cylinder has a piston movable by movement of the pressing plate along the pressing chamber.

3,827,355

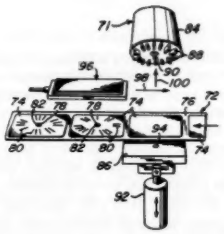
METHOD OF MAKING RECORD MEMBERS

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 92,468, Nov. 24, 1970, Pat. No. 3,783,783. This application Apr. 9, 1973, Ser. No. 349,596

Int. Cl. B41m *3/14;* B44b *5/00*

U.S. Cl. 101—26 1 Claim



There are disclosed record members in the form of a web of pressure sensitive labels and a web of tickets formed by transverse cuts in the web, with each member having a mark printed at one marginal edge, the mark preferably being printed using invisible ink. A method of making the record members includes the step of inking a cutter and operating the cutter to simultaneously cut the web to provide a plurality of record members and printing along at least one marginal edge of each member. Another record member has an aligner formed in it and a printed mark forming an outline around the aligner, the aligner having a predetermined relationship with respect to a code printed on the record member. A method of making the record member comprises providing code forming

members and aligner forming members, inking the aligner forming member, applying the code to the record member and substantially simultaneously forming an aligner in the record member and printing a mark immediately adjacent the aligner. There is also disclosed a web of record members composed either of pressure sensitive ticket, or label stock material in which there are marks disposed at equally spaced apart intervals along its length. The marks are used to control intermittent feeding of the web of record members so that recording can be at any desired location on the record members and the record members can be cut to the desired length without shifting the cutter or the recorder means relative to each other. There is also disclosed apparatus for practicing these methods.

3,827,356

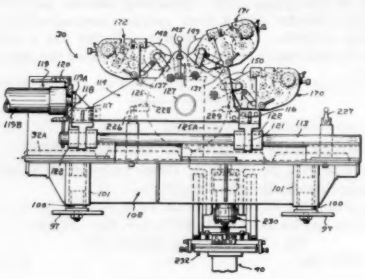
ROTARY PRINTER FOR USE IN CONJUCTION WITH AN INDEXED CONVEYOR

Gerald A. Snow, 5 Pine Ridge Rd., Cumberland Foreside, Maine, and Vladimir W. Orlovsky, 691 High St., Bath, Maine 04530

Continuation-in-part of Ser. No. 192,190, Oct. 26, 1971, abandoned. This application Aug. 23, 1972, Ser. No. 283,056

Int. Cl. B41f *17/00, 3/58*

U.S. Cl. 101—35 **15 Claims**



A rotary printer for printing articles advanced step-by-step by a conveyor and thermoformable sheets carried thereby. The printer has a base in support of a carriage and includes structure to reciprocate the carriage relative to the base a predetermined distance lengthwise of the conveyor. The carriage has a rotatable member including at least one arcuate blanket portion that may include sections, one form roll for each color to be printed and for each blanket portion, and an ink distributor for each form roll. Structure is provided to rotate the rotatable member in the same direction in both directions of carriage travel, one direction being the printing direction with the blanket portion or portions engaging the article or articles or the thermoforable sheet and, in the other direction, each blanket portion being returned to a predetermined starting position and, by then, being at least partially re-inked by rolling engagement with a form roll. Where more than one other form roll is provided for each blanket portion, each blanket portion is re-inked by its rolling engagement therewith so that most of the re-inking is effected in the return stroke. When a blanket portion is a minor arc, the rotatable member is turned at such an increased rate in the inking direction that it is always in its predetermined starting position at the end of the travel of the carriage in its return or inking direction. The printer may be incorporated in a thermoformer.

3,827,357

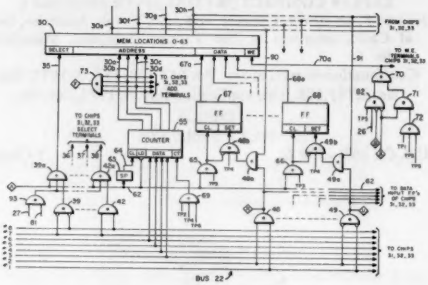
ON-THE-FLY PRINTER WITH SHORTENED PRINT CYCLE

Ralph W. Mahoney, Telford, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 12, 1973, Ser. No. 396,636

Int. Cl. B41j *7/08*; **G06f** *3/12*

U.S. Cl. 101—93 C **9 Claims**



An "on-the-fly" printer is equipped with an associative memory which is arranged to automatically account for all the non-printable characters in a print line and to shorten the print cycle time of the printer.

3,827,358

DEVICE FOR MOVING A WEB IN A ROTARY PRINTING PRESS FOR THE PRINTING OF VARYING FORMATS

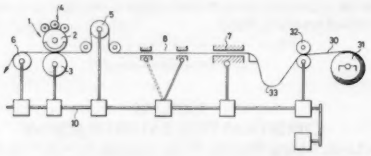
Mikulas Budai, Gallen, Switzerland, assignor to Firma Ferd Ruesch Maschinenfabrick, St. Gallen, Switzerland

Filed Sept. 25, 1972, Ser. No. 291,842

Claims priority, application Germany, May 23, 1972, 2224970

Int. Cl. B41f *13/04*; **B41j** *15/16*

U.S. Cl. 101—228 **11 Claims**



A rotary printing press for printing varying formats on a continuous web of paper that is fed in an intermittent manner, includes the combination of a feed mechanism and a compensating roll means in order to maintain the web of paper continuously under a uniform pressure. In addition, the control of the compensating roll means permits the web of paper to be pulled through the printing machine with constant speed during the rolling of the printing plate, in a manner that the movement of the compensating roll means compensates for the sinusoidal movement of the intermittent feed so as to establish a constant speed of the paper web.

3,827,359

UNDERWATER DEMOLITION DEVICE

Raymond S. Daughenbaugh, 4601 S. "B" St., Oxnard, Calif. 93030

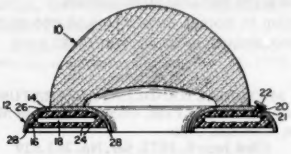
Filed Aug. 28, 1968, Ser. No. 756,351

Int. Cl. F42b *22/00*

U.S. Cl. 102—1 R **8 Claims**

A device for attaching an explosive charge to an underwater portion of a sea-going vessel including an adhesive substance

having a suitable chemical material therein adapted to react with sea water and initiate an exothermic reaction which melts

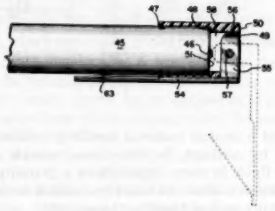


the adhesive substance and bonds the device and any connected explosive charge to the hull of the vessel.

3,827,360
PNEUMATIC LAUNCHER AND COMBINATION FLARE-IGNITOR

Allan F. J. Geimer, 1701 Richard W. Dr., Glenview, Ill. 60025

Filed Apr. 21, 1972, Ser. No. 246,300
Int. Cl. C06d *1/10*
U.S. Cl. 102—70 F **13 Claims**

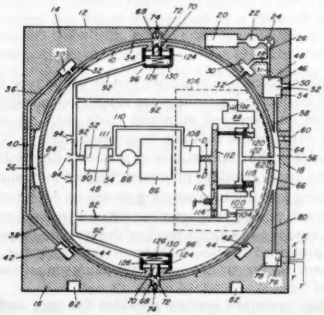


This invention relates to a pneumatic launcher and to a flare ignitor. The flare ignitor permits the flare to be automatically ignited once it leaves launcher as well as providing a means to readily hand ignite a flare. The launcher permits a plurality of devices to be sequentially launched.

3,827,361
SETTABLE PNEUMATIC ALTITUDE DETECTION EQUIPMENT

Alvin L. Zechnowitz, Rockland; James A. Xenakis, Nassau; John D. Barbieri, Queens, and Nai Chai Chang, Westchester, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 17, 1973, Ser. No. 397,526
Int. Cl. F42c *5/00;* **G01c** *21/00, 19/30*
U.S. Cl. 102—70.2 R **7 Claims**

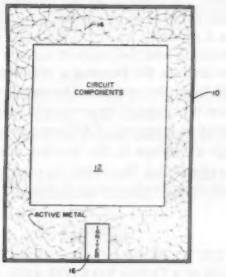


A settable pneumatic altitude detection device provides an electrical signal to a missile or projectile for arming and destructing the missile or projectile at preset altitudes. The present invention's main structural elements are a pair of sphere supports which hold therein a rotatable sphere assembly. The sphere support structure has two spherically shaped gas bearing pads which are separated and fixedly held to a circularly shaped collar. Two separate gas supplies are operatively positioned in the sphere support structure and in the rotatable sphere. An electrical initiating signal causes a gas release mechanism and a time delay valve, for each gas supply, to controllably release gas therefrom. Gas is forced through peripherally positioned jet nozzles on the sphere, and through operatively positioned venting ports and calibrated orifices in the sphere support structure. After the missile is fired, the sphere is pneumatically uncaged from its polar supporting structure so that it can freely spin on a nearly frictionless gas cushion. A pneumatically controlled distance meter operatively located in the sphere activates pressure operated switches on the ascent and the descent of the missile trajectory. The aforesaid switches provide an electrical signal which arms the missile on ascent and causes the missile to self-destruct on descent.

3,827,362
ELECTRICAL CIRCUIT DESTRUCT SYSTEM

Clayton M. Huggett, Burke, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 282,084
Int. Cl. H04k *1/00*
U.S. Cl. 102—90 **8 Claims**



A system for destroying critical electrical circuitry within a pressurized container, without creating hazards to surrounding apparatus and personnel, utilizing active metals and the pressurizing gas as a reactant.

3,827,363
WATER-SOLUBLE SHOTSHELL WAD AND METHOD OF MANUFACTURING SAME

Roger J. Curran, Stratford, Conn., assignor to Remington Arms Company Inc., Bridgeport, Conn.

Filed Dec. 13, 1972, Ser. No. 314,708
Int. Cl. F42b *7/08*
U.S. Cl. 102—95 **15 Claims**

A shotshell wad is molded from a water-soluble plastic such as an ethylene oxide polymer or a poly(ethylene oxide)-urea blend. A water-insoluble layer is formed on the wad either by coating the wad with a water-soluble material or exposing the

outer surface of the wad to a material such as an acrylic acid polymer which reacts with the surface of the wad to produce a water-insoluble association compound covering the surface so that the wad is insoluble while in the shotshell. When the shotshell is fired, this water-insoluble layer is abraded and burned so that a substantial portion of the water-soluble material is exposed placing the wad in a water-soluble condition.

3,827,364

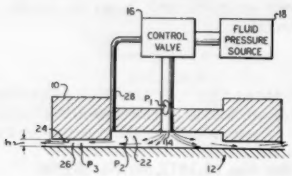
ADHESION AIR BEARING FEEDBACK CONTROL APPARATUS AND METHOD

Richard L. Maison, San Diego, Calif., assignor to Rohr Industries Inc., Chula Vista, Calif.

Filed Oct. 25, 1972, Ser. No. 300,504

Int. Cl. B61b *13/08*

U.S. Cl. 104—23 FS **9 Claims**



The method and apparatus which utilizes Bernoulli's theorem, in part, for controlling the displacement H of an air bearing relative to its support surface wherein the fluid under pressure from a pressure source is supplied to a region intermediate the bearing and the support surface to suspend or alternatively, to levitate the bearing a predetermined equilibrium distance H from the surface. The supply of fluid from the pressure source is regulated by a valve in response to pressure variations sensed at least one of different pressure zones of the region through a passage in the bearing connecting said one zone of the region and the valve to maintain the predetermined separation or displacement distance.

3,827,365

AUTOMATIC TYPE OF LOAD-CARRYING TROLLEY AND ITS APPLICATIONS TO STORAGE INSTALLATION ON ONE OR MORE LEVELS

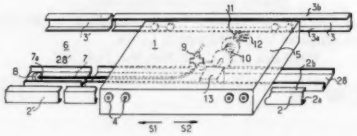
Georges Coppel, Paris, France, assignor to Construction Mills.K, Saint-Ouen, France

Filed Apr. 26, 1972, Ser. No. 247,726

Claims priority, application France, May 12, 1971, 71.17274

Int. Cl. B61j *3/00*

U.S. Cl. 104—88 **4 Claims**



A storehouse with parallel corridors containing pallets, with a self-propelling selecting trolley adapted to take the pallets on to a transfer device rolling on a track perpendicular to the corridors and possibly into an elevating device, the control originating from a central point.

The motive power and the control signals between the control point, the transfer trolley and the self-propelling trolley are transmitted by cables, continuity being assured on the various routes by winding drums and movable cables, provision being made so that the carrying device cannot move until the carried device attached through its winding-drum to the cable has engaged with the carrying device.

Application to storage installations on one or more levels with entrance and exit by service corridors.

3,827,366

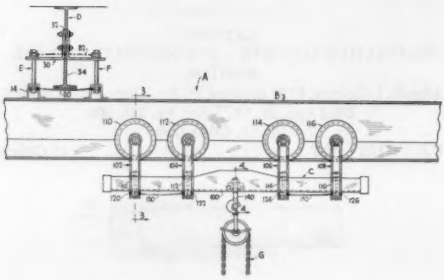
MATERIAL HANDLING APPARATUS

Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Wickliffe, Ohio

Filed June 9, 1972, Ser. No. 261,529

Int. Cl. B61b *3/00*

U.S. Cl. 104—89 **24 Claims**



Overhead monorail material handling devices having parts supported by resilient, flexible closed vessels or containers filled with fluid. In some applications a plurality of such vessels or containers are connected by conduit means so that the liquid therein can flow from one to another.

3,827,367

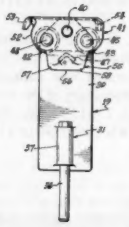
CONVEYOR TROLLEY WITH CAMMING HEADS

Marius F. Paglia, 2913 Westbrook Ave., Hollywood, Calif. 90046

Filed Nov. 27, 1972, Ser. No. 309,672

Int. Cl. E01b *25/22*

U.S. Cl. 104—93 **6 Claims**



An improved conveyor trolley system of the type in which a series of load-carrying trolleys are supported in rolling suspension from an overhead monorail track, and are moved by pushing engagement between successive trolleys. The invention resides in the combination of a track with predetermined curvature range, trolleys of predetermined maximum length, and leading and trailing camming means on each trolley to insure smooth pushing engagement when a trolley series of the specific type is moved on a track of the specified type.

One preferred species includes a skirt cam for inhibiting derailment of the trolley when traveling on a track of the specified type.

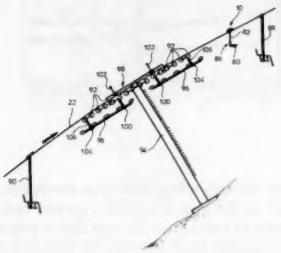
Another preferred species provides the cam surfaces in a unitary formed sheet metal body incorporated in each trolley head assembly.

3,827,368

BRAKING DEVICE OF A RESCUE APPARATUS FOR AN OVERHEAD CABLE TRANSPORT INSTALLATION

Marcel Garnier, Grenoble, France, assignor to Pomagalski S.A., Fontaine, France

Filed Feb. 1, 1973, Ser. No. 328,598
Claims priority, application France, Feb. 11, 1972, 72.4777
Int. Cl. E01b *25/14*
U.S. Cl. 104—112 7 Claims



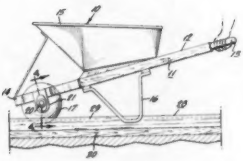
A rescue apparatus comprising a carriage serving as a support for a seat, which can run by gravity on the carrier cable of an overhead cable installation. A brake system permits the regulation of the velocity downward travel on the cable. The carriage and the brake system are so devised as to permit the passing of the grips from which are suspended the loads on the cable and also of the towers.

3,827,369

WHEELBARROW HAVING SPHERICAL WHEEL

Harry B. Mueller, 938 Queen Dr., West Chester, Pa. 19280

Filed Oct. 2, 1972, Ser. No. 293,765
Int. Cl. B61b *13/00*; B62b *1/18*
U.S. Cl. 104—118 7 Claims



A wheelbarrow having a hopper and a frame with handles at one end is provided with a spherically shaped wheel which is rotatably mounted by means of an axle and bearings at the other end of the frame to support the frame. The spherical wheel permits the frame to be pivoted readily about a vertical axis even when the wheel is engaged in a channel such as between parallel track-rails. In one embodiment, the spherical wheel contains a toroidal inner tube which grips the axle when inflated so that the axle rotates in the bearings mounted on the frame. In another embodiment, the spherical wheel is tubeless, and aligned stub shafts extend outwardly in opposite directions from the sidealls of the spherical wheel for rotation in the bearings mounted on the frame.

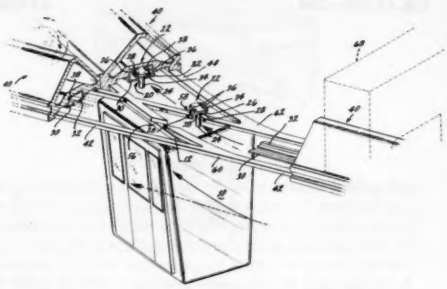
3,827,370

PASSIVE SWITCHING SYSTEM

Charles C. Hill, La Jolla, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed July 9, 1973, Ser. No. 377,607
Int. Cl. B65g *17/44*
U.S. Cl. 104—130 13 Claims

Apparatus for the switching of a magnetically suspended vehicle from a primary guideway through a curved intersection to a secondary guideway. The vehicle is equiped with a pair of electromagnetic motors which provide a magnetic force to suspend the vehicle from a pair of support rails positioned above and in a superimposed relationship with the electro-magnetic motors. The rails at the intersection of the guideways have increased width so as to maintain an essentially superimposed relationship with their respective electromagnetic motor throughout the curve of the intersection and one rail of each guideway has at least one opening to allow the vehicle structure to pass through and the remaining rail of each guideway forms a unitary rail member. The vehicle is switched by a relative speed difference between the motors caused by input power frequency differences.

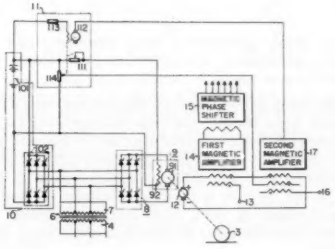


3,827,371

LINEAR AND ROTARY MOTOR DRIVING SYSTEM FOR ELECTRIC CAR

Yoshimitsu Onoda, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 19, 1972, Ser. No. 290,355
Claims priority, application Japan, Sept. 20, 1971, 46-72423
Int. Cl. B60l *9/16*
U.S. Cl. 104—148 LM 7 Claims

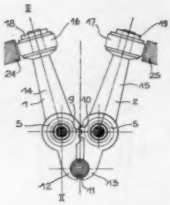


A driving system for an electric car comprising a linear motor, a controlled rectifier device, and a d.c. motor connected to the wheels of the car. The primary winding of the linear motor is disposed along a track for producing a mobile magnetic field, while the secondary winding thereof is disposed on the car and is connected to the controlled rectifier device which drives the d.c. motor. The controlled rectifier device is suitably controlled so that the propulsive force can be developed by the d.c. motor in a low speed range and by the linear motor in a high speed range.

3,827,372
HAULAGE GRIP FOR RELEASABLY GRIPPING A TRACTION CABLE

Roger Laurent, Chambery, France, assignor to Poma 2.000 S.A., Fontaine, France

Filed Dec. 30, 1971, Ser. No. 213,954
Claims priority, application France, Dec. 31, 1970, 7047652
Int. Cl. B61b 7/20
U.S. Cl. 104—209 4 Claims

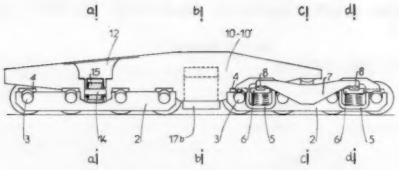


A haulage grip for releasably gripping a traction cable by which a vehicle provided with that grip is moved. The haulage grip comprises two pivotally mounted levers each lever being biased by a torsion bar into a closing position for gripping the cable and each lever being provided with a roller to cooperate with stationary cam rails which control the opening and closing of the grip. Toothed segments connect mechanically the two levers which pivot together symmetrically.

3,827,373
ARTICULATED RAILWAY TRUCK

Robert Mouneydiere, Le Perreux, France, assignor to Creusot-Loire, Seine, France

Filed Aug. 2, 1971, Ser. No. 168,181
Int. Cl. B61f 3/10, 5/06, 5/16
U.S. Cl. 105—182 R 3 Claims



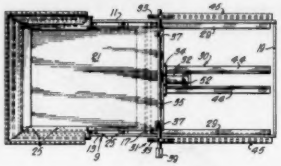
A low hung double bogie for heavy large loads has a chassis for each bogie beneath the axles and receiving no load. The load-carrying frame extends over the bogies and rests on a cross-member at each bogie. Each cross-member is supported by laterally spaced secondary equalizers at each bogie. The ends of the pairs of secondary equalizers are supported by cross-members in turn supported by primary equalizers between adjacent axles of the bogie and carried by the axle bearings.

3,827,374
VARIABLE FORCE HOPPER GATE ACTUATING MECHANISM

Robert Beck Winsor, Senneville, Quebec, Canada, assignor to IEC-Holden Ltd., Montreal, Quebec, Canada

Filed Apr. 27, 1973, Ser. No. 354,923
Int. Cl. B61d 7/20, 7/22, 7/26
U.S. Cl. 105—282 P 11 Claims

A rack and pinion gear variable force applying mechanism particularly suitable for opening the gates of railway hopper cars. The mechanism includes a cam member, preferably rotatably mounted on the gate, and a rack member preferably fixed to a frame guiding the gate between open and closed positions. Teeth on the cam cooperate with slots on the rack to move the gate between open and closed positions as the

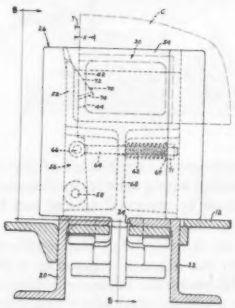


cam is rotated through substantially one revolution. Each succeeding tooth on the cam is located a greater radial distance from the center of rotation of the cam than a preceding tooth to transmit a variable force between the cam and rack during cam rotation.

3,827,375
CONTAINER SECURING MEANS FOR RAILWAY FLAT CARS

Boris S. Terlecky, and Leonardus F. A. Grob, both of St. Louis, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation of Ser. No. 711,373, March 7, 1968, abandoned.
This application May 30, 1972, Ser. No. 257,981
Int. Cl. B60p 7/10; B65j 1/22; B61d 45/00
U.S. Cl. 105—366 D 7 Claims



Means to secure containers on railway flat cars including a releasable lock carried by a corner support for the container and adapted to engage the lower corner of a container at an opening within the corner fitting of the container. The lock automatically secures the container upon the lowering of the container onto the corner supports and is released by a vertical lifting of the container from the corner supports upon a predetermined force exerted by the container against the lock upon the vertical lifting of the container. The container is retained on the corner supports by the locks until a predetermined lifting force is exerted whereby the container is released without any manual actuation of the container securing means.

3,827,376

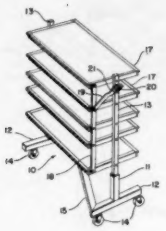
SHELF RACK

Archie Solomon, 2616 Fenwick, University Heights, Ohio 44118

Continuation of Ser. No. 661,923, Aug. 21, 1967, abandoned. This application Mar. 10, 1971, Ser. No. 123,067

Int. Cl. A47b 43/00

U.S. Cl. 108—91 3 Claims



This invention comprises a shelf rack in which the shelves can be collapsed to an essentially vertical position and the end frames supporting the shelves are connected by an essentially diagonal rail whereby the racks can be nested for storage.

3,827,377

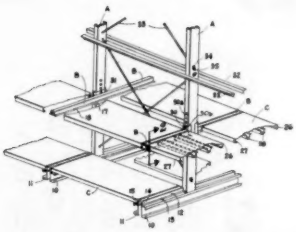
RACK ASSEMBLY

Paul C. Aughtry, Jr., Greenville, S.C., assignor to Gower Manufacturing Co., Inc., Greenville, S.C.

Filed Apr. 20, 1972, Ser. No. 245,805

Int. Cl. A47f 5/10

U.S. Cl. 108—108 3 Claims



A rack assembly including vertical columns that have elongated load arms extending outwardly therefrom. The load arms include a a pair of interlocking sections having outwardly extending flanges adjacent the lower edge thereof. Deck panels are supported on the flanges of the load arms. The deck panels are constructed of an elongated planar sheet of sheet metal having opposed outer edges with a plurality of supporting members carried therebetween. Tie straps interconnect the outer edges of the deck panel adding rigidity thereto.

3,827,378

DISPOSAL OF WASTE BY INCINERATION

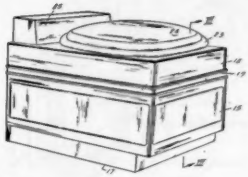
Frederick W. Kufrin, Janesville; Paul R. Virnoche, Newton; Donald J. Allen, Fort Atkinson; Phillip E. Gokey, Whitewater, and Frederick A. Rose, Fort Atkinson, all of Wis., assignors to Polar Wave Company, Sheboygan, Wis.

Division of Ser. No. 20,319, March 17, 1970, Pat. No. 3,694,825. This application May 22, 1972, Ser. No. 256,776

Int. Cl. F23g 5/12

U.S. Cl. 110—9 R 23 Claims

Waste is disposed of by incineration including burning solids, vaporizing liquids and converting any residual gases into elemental substantially odorless form. Discharge temperature of the treated gases is reduced to an acceptable level. Practice of the method is exemplified in an incineration apparatus such as a toilet utilizing a "soft" gas flame providing not only incinerating and vaporizing heat within a firebox but



also gas consuming heat in a combustion passage leading from the firebox. Circulation of the products of combustion is promoted by an exhaust fan which draws them across a cooling air gap into a settling chamber before discharge from the apparatus. Various operating and safety structures and controls are provided.

3,827,379

ROTARY KILN TYPE SOLID WASTE INCINERATING SYSTEM AND METHOD

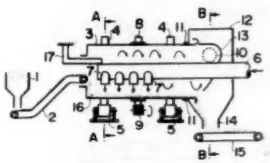
Hidemasa Tsuruta, Tokyo, and Michinori Makiguchi, Chibaken, both of Japan, assignors to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed Mar. 23, 1973, Ser. No. 344,289

Claims priority, application Japan, Apr. 24, 1972, 47-028968

Int. Cl. F23g 5/06

U.S. Cl. 110—14 20 Claims



A rotary kiln type solid waste incinerating system and a method for continuously and efficiently incinerating a large amount of solid waste are disclosed. A vortex is established within the rotating cylinder of the kiln by injection of air to vigorously agitate the atmosphere within the kiln and thereby ensure uniform distribution of oxygen and efficient combustion. In one embodiment, the system includes an air induction duct which is approximately concentric with the rotary cylinder and which has a plurality of air injection nozzles at suitable intervals along its length for injecting air into the rotary cylinder in a direction tangential to its inner surface to establish a vortex.

3,827,380

METHOD FOR LINKING CIRCULAR KNITTED GARMENT SECTIONS

Luis Sentis Anfruns, Panama St. Nos. 2 & 4, Barcelona, Spain

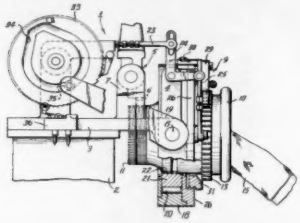
Continuation-in-part of Ser. No. 217,991, Jan. 14, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,893

Int. Cl. D05b 7/00

U.S. Cl. 112—25 4 Claims

A method for linking together by stitching in a linking machine toe pieces and upper stocking sections using a linking machine utilizing separable work cylinders which are loaded

with stocking sections at separate work stations. The toe pieces and upper stocking sections are individually circular knitted, leaving a last yarn course loosely formed on each stocking section to enable the loops of the last yarn course of



the stocking sections to be mounted on the points of the work cylinder by operators at individual work stations. The loaded work cylinders are transferred to the linking machine, the stocking sections are joined, and the work cylinders are unloaded in a smooth, continuous operation.

3,827,381

AUTOMATIC SEWING MACHINE CONTROL HAVING A MANUALLY CONTROLLED OPERATING SEQUENCE

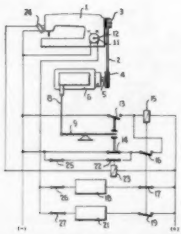
Theo Meindert Baanstra, Warmbronn; Wolf-Rudiger Von Hagen, Grotzingen, and Wolfgang Niem, Leonberg, all of Germany, assignors to Union Special Maschinenfabrik G.m.b.H., Stuttgart, Germany

Filed Feb. 9, 1972, Ser. No. 224,676

Claims priority, application Germany, Feb. 16, 1971, 2107351

Int. Cl. D05b *19/00*

U.S. Cl. 112—121.11 **14 Claims**



This disclosure relates to an automatic control for a sewing machine which will effect the automatic controlling of the operation of the sewing machine at both the leading and trailing edge of a workpiece while at the same time permitting a manually controlled operating sequence during other portions of the sewing cycle which will in no way affect the automatically controlled operations.

3,827,382

METHOD AND APPARATUS FOR FORMING NORMALLY APPEARING STITCHES

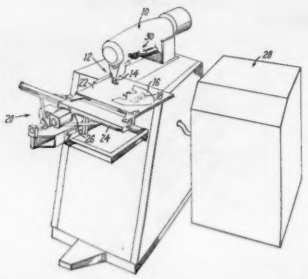
Raymond A. De Vita, Hamilton; Adolph S. Dorosz, Beverly, and Henry M. Scaletti, Jr., Wenham, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Oct. 24, 1972, Ser. No. 299,945

Int. Cl. D05b *3/04, 47/04*

U.S. Cl. 112—262 **6 Claims**

In a sewing machine having thread stitch forming instrumentalities for forming successive stitches in a workpiece and having means for moving the workpiece in vector directions and wherein the stitch forming instrumentalities may produce stitch abnormalities in at least one of the vector directions of workpiece movement, a method of forming normally appearing stitches by tensioning the stitch forming thread in response to the vector direction of workpiece movement. The method



may also include drawing the stitch abnormalities into the workpiece. Apparatus for carrying out the foregoing method has means responsive to the vector direction of workpiece movement for controlling variable thread tensioning means included in the stitch forming instrumentalities.

3,827,383

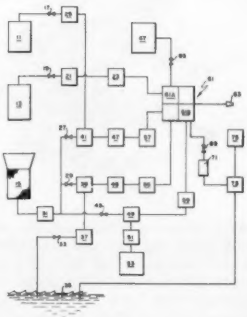
SALVAGE METHOD UTILIZING WATER EMULSIFIED POLYESTER RESIN AND HOLLOW MICROSPHERES

Allen Winer, Rockville, and Robert E. Proodian, Upper Marlboro, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 16, 1971, Ser. No. 163,182

Int. Cl. B63c *7/12*

U.S. Cl. 114—50 **5 Claims**



The invention is a method of supplying buoyancy to sunken objects by the use of a combination of water emulsified polyester resin, water, hollow microspheres, and depending on ambient conditions, a drag reduction agent.

3,827,384

CONTAINERSHIP

Thomas Trygve Lunde, 6 Locksley Ave., San Francisco, Calif. 94122, and Einar O. Lunde, 66 Calypso Shores, Novato, Calif. 94947

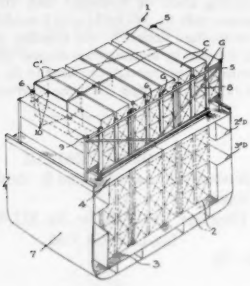
Filed Apr. 21, 1972, Ser. No. 246,475

Int. Cl. B63b *25/02*

U.S. Cl. 114—72 **14 Claims**

A containership includes a plurality of container-receiving cells each defined by a plurality of vertical guides extending

from the tank top to a level adjacent the main deck hatch opening. Additional guides further extend upwardly from the below-deck guides to provide series of uninterrupted cells each accommodating a plurality of containers both below and



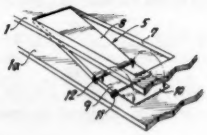
above deck. Included are other above-deck guides to permit stowage to the skin of the ship. Hatch covers are provided having hinged end sections automatically operable during raising and lowering thereof within the above-deck guides to lock and unlock the covers at the main deck hatch coaming.

3,827,385

CARGO VESSEL

Hisashi Soma, Yokohamashi, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Nov. 2, 1972, Ser. No. 303,201
Claims priority, application Japan, Nov. 2, 1971, 46-87340
Int. Cl. B63b *3/48*
U.S. Cl. 114—85 **1 Claim**



A cargo vessel in which the tweendecks are displacable vertically, being lifted to clear the hold for bulk cargo. Ramps are provided which are operable when the tweendecks are lowered to permit passage vehicles through an opening in the upper deck down the ramp to the next lower deck. The ramp is hingedly supported at one end at the upper deck at one end of the opening. The other end of the ramp is slidably supported on the lower deck so that when the lower deck is raised, it raises that end of the ramp into the opening. That end of the ramp is provided with a subramp which has limited pivotal movement relative to the main ramp and a foldable extension at the free end which may be folded back over the subramp.

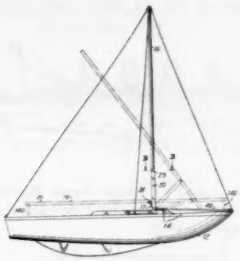
3,827,386

MEANS FOR LOWERING THE MAST ON SAILBOATS

Carl Faden, 2830 Bay Dr., Merrick, L. I., N.Y. 11566

Filed July 9, 1973, Ser. No. 377,550
Int. Cl. B63b *15/00*
U.S. Cl. 114—91 **9 Claims**

This invention provides means for lowering the mast on a sailboat without requiring any adjustment or release of the shrouds, stays or sails. The invention comprises vertical support means pivotally secured at one end to the hull of the sail-



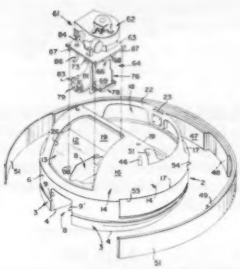
boat, the second end being pivotally secured to an intermediate position on a mast, the lower end of the mast being pivotally and slidably secured to the hull of the sailboat.

3,827,387

BOAT CONSTRUCTION FOR AMUSEMENT PARK USE

Edgar A. Morgan, Palo Alto, Calif., assignor to Arrow Development Co., Inc., Mountain View, Calif.

Filed May 22, 1972, Ser. No. 255,382
Int. Cl. B63b *21/04*
U.S. Cl. 114—219 **3 Claims**



Presented is a boat construction for use primarily in amusement parks where patrons pay a prescribed fee and operate the boat for a limited time. The boat hull is generally cylindrical in its configuration, is equipped with propulsion means activated by the concenssionaire, and steering means controlled by a passenger or patron occupying the boat.

ERRATUM

For Class 114—235 see:
Patent No. 3,827,407

3,827,388

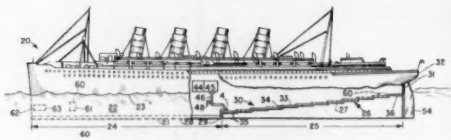
SHIP PROPULSION SYSTEM

William H. Fulton, Chelmsford, Mass., assignor to Fulton Projects, Inc., Chelmsford, Mass.

Filed June 1, 1971, Ser. No. 148,568
Int. Cl. B63h *11/00, 11/12;* **B63b** *1/34*
U.S. Cl. 115—11 **7 Claims**

An elongated water borne vessel is propelled forwardly with substantially less horse power than required by conventional propeller driven ships by means of a series of upwardly rising steps extending from full depth at the ship bottom rearwardly

to just below the water line proximate the stern. Compressed air is delivered to the bottommost step for propelling the ship forwardly and then rising and expanding up each successive

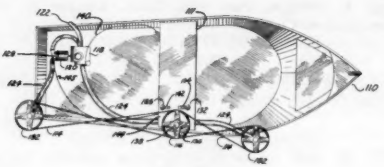


step to continue to exert forward thrust. Boundary surfaces along the sides of the steps prevent sidewise escape of the air bubble occupying each step.

3,827,389
BOAT STABILIZER

Richard L. Kureth, 31742 Sheridan, Garden City, Mich. 48135

Filed Aug. 11, 1971, Ser. No. 170,769
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 A **5 Claims**

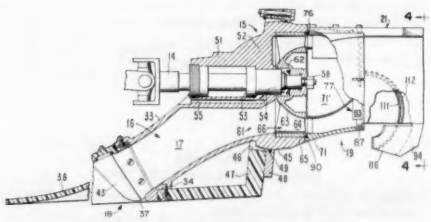


A boat stabilizer system comprising a pair of nozzles attached permanently or temporarily to a boat to extend beneath the boat adjacent the front and rear so that a pressurized stream of water can be directed through the nozzles in a desired direction to stabilize the boat against wind and current to prevent drifting.

3,827,390
HYDROJET PROPULSION DRIVE

Robert T. De Vault, Malibu, and Ralph Maloof, Woodland Hills, both of Calif., assignors to Daul Davidson, Denver, Colo.

Continuation-in-part of Ser. No. 108,946, Jan. 22, 1971. This application Dec. 21, 1971, Ser. No. 210,394
Int. Cl. B63h *11/10*
U.S. Cl. 115—12 R **28 Claims**

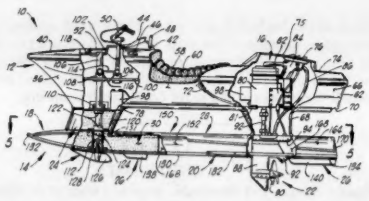


An improved hydrojet propulsion drive is described for a propulsion drive having a pair of vertical substantially rectangular openings on either side of a rotatably mounted steering vane with means for directing the propulsion jets from said openings into the steering vane, downwardly, and forwardly for reverse drive of the craft. The water directing means includes a pair of deflection plates movable across the jet streams deflecting the stream into a reversal cup carried by and below the steering vane. Deflection ridges can be included on the deflection plates for sub-dividing the reversal jet stream. The hydrojet pump impellor and stator stages are positioned at mating ends of foreward and aftward housings secured together only by two bolts which readily permit disassembly for immediate access to the impellor and stator. The stator can be formed by slotting cup-shaped member, projecting straightening vanes through the slots to an opposed flange member and ridgedly securing the three-elements together.

3,827,391
HYDROFOIL VEHICLE

William R. Stanberry, Sr., and William R. Stanberry, Jr., both of Derby, Kans.

Filed Apr. 23, 1973, Ser. No. 353,903
Int. Cl. B63h *5/06*
U.S. Cl. 115—70 **6 Claims**

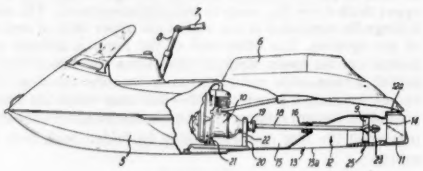


The hydrofoil vehicle has a buoyant hull to support a rider. A powering device is in the hull with a propeller therefrom. The ski assembly includes a main ski below the hull mounted on the forward and aft ends thereof. It has a pair of helper skis oppositely alongside the aft end portion of the main ski. Stabilizing fins extend below the main ski, and a rudder is used to steer.

3,827,392
WATER PLANING CRAFT

Dennis L. Jones, Breaston, England, assignor to Scooter Ski Limited

Filed July 21, 1972, Ser. No. 274,015
Int. Cl. B63h *11/02*
U.S. Cl. 115—70 **6 Claims**

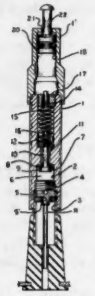


A planing water craft includes a hull having a longitudinally directed tunnel located on the centre line of the craft, the tunnel having a forward inlet and a rear outlet with the former disposed rearwardly of the centre of the hull, and there being a single resiliently-mounted propellor shaft in the tunnel driven from an engine resiliently mounted in a sealed engine compartment forwardly of the tunnel.

3,827,393
VEHICLE TIRE DEFLATION SIGNALLING MEANS

Harry C. Winther, Glen Mills, Pa., assignor to Walter J. Winther; Charles R. Winther; William J. Winther and Shirley M. Winther, Glen Mills, Pa., part interest to each

Continuation-in-part of Ser. No. 113,566, Feb. 8, 1971, Pat. No. 3,717,845. This application Feb. 15, 1973, Ser. No. 332,776
Int. Cl. B60c *23/06*
U.S. Cl. 116—34 R 6 Claims

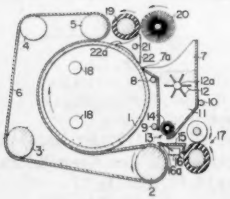


An attachment for a pneumatic tire for a vehicle or the like which contains a pressure-differential-responsive valve communicating with the interior of the tire and operative to activate a conspicuously decorated signal making unit to cause the unit to be displayed for visual observation when air pressure in the tire for any reason is reduced to a predetermined undesirably low value, whereby an observer may ascertain that the tire is under-inflated and thus in a possibly hazardous condition.

3,827,394
DEVELOPER APPARATUS

Yasuhiro Takahashi, and Osamu Saita, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1972, Ser. No. 225,438
Claims priority, application Japan, Feb. 15, 1971, 46-8216; July 16, 1971, 46-63344
Int. Cl. G03g *13/08*; B05b *7/14*
U.S. Cl. 118—2 4 Claims

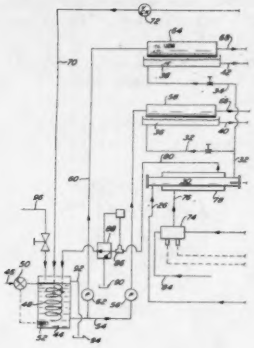


Means detect positioning of a medium bearing a latent image and responsive thereto actuate discharge of developer material from hopper means. Means convey the medium and developer material thereon about a heated drum. Endless belt means conform the medium to the drum.

3,827,395
ADHESIVE SYSTEM

Walter J. Goettsch, Wilmette, Ill., assignor to Harris-intertype Corporation, Cleveland, Ohio

Filed July 3, 1972, Ser. No. 268,403
Int. Cl. B05c *1/08, 11/10*
U.S. Cl. 118—5 6 Claims

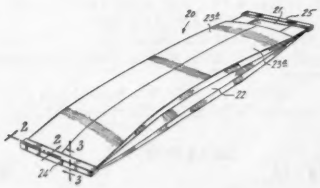


Apparatus for applying a starch adhesive bonding agent which is continuously circulated and heated to a temperature about 20°F below its gelatinization temperature. An applicator roll for applying the bonding agent is also heated by a circulation system so as to increase the temperature of any bonding agent on the roll to a desired temperature such as 2°F below gelatinization temperature.

3,827,396
APPARATUS FOR PRODUCING PAPER BAGS

Dominick Terzuoli, 2258 E. 70 St., Brooklyn, N.Y. 11234

Division of Ser. No. 122,321, March 9, 1971, Pat. No. 3,716,181. This application Dec. 18, 1972, Ser. No. 316,368
Int. Cl. B05c *11/00*
U.S. Cl. 118—44 1 Claim



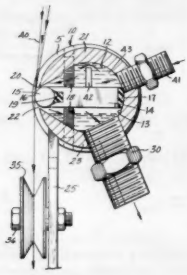
Paper bags are produced by folding a web of paper and adhesively securing together overlapped longitudinal edges of the folded web to form a flat tube having opposed panels connected, at their sides, by pleats which extend along the sides of the tube and which are creased inwardly between the panels, cutting across the tube at locations spaced apart along the latter to divide the tube into sections, and embedding at least one end of each tube section in an enveloping cap of thermoplastic material which extends across the tube section and at least partly closes the respective end. The enveloping cap is formed on an end of each tube section, preferably during the movement of successive tube sections along a conveyor path, by dipping the tube section end in a mass of the thermoplastic material heated to a plastic state and then withdrawing the tube section end from the heated mass, or by inserting the tube section end into the cavity of a mold that moves with the tube sections and into which the thermoplastic material is injected about the tube section end, or by applying the ther-

moplastic material in heated plastic state to one or more rollers that are traversed by the tube section end as the respective tube section is moved along the conveyor path.

3,827,397
APPARATUS FOR COATING MOVING FILAMENTARY STRANDS

Friedrich Hebberling, deceased, late of Pittsburgh, Pa., and Lothar J. Uhl, administrator, 7720 E. Jefferson Ave., Detroit, Mich. 48231

Filed June 29, 1971, Ser. No. 157,823
Int. Cl. B05c *1/04*
U.S. Cl. 118—50 **6 Claims**

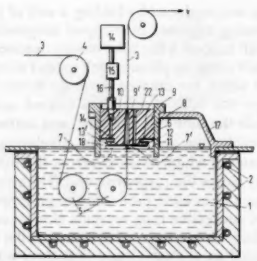


Apparatus for coating continuous moving filamentary strands with a binder material that has a walled binder material supply chamber and a walled sump chamber, said chambers having a non-rotatable applicator shoe with an exteriorly exposed surface and interposed in spaced relationship between the chamber walls. Binder material under low pressure flows in a sheet-like film from the supply chamber to the sump chamber by wall attachment over the exposed surface of the applicator shoe. The filamentary strands in contact with and moving through the sheet-like binder material are thereby continuously coated with the binder material.

3,827,398
APPARATUS FOR TINNING ELECTRICAL CIRCUIT WIRES AND THE LIKE

Hermann Trattner, and Hans Raab, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 12, 1973, Ser. No. 331,851
Claims priority, application Germany, Feb. 18, 1972, 2207719
Int. Cl. B05c *3/15*
U.S. Cl. 118—58 **9 Claims**

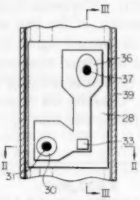


An apparatus for tinning electrical circuits wires with a solder layer of tin or a tin alloy in which the wire is fed through a solder bath of tinning metal with the wire emerging upwardly therefrom in a substantially vertical direction, the exit point of the wire from the bath being encircled by a non-metallic tubular member, for example of quartz or quartz glass, with the casing having its adjacent end immersed in the bath. The upper end of the member is closed by a non-metallic insert which is spaced above the surface of the bath and is provided with an orifice through which the wire passes, the space between the insert and the surface of the bath being adapted, in use, to receive an agent which will inhibit, i.e., dissolve or prevent the formation of tin oxide, for example, an inert gas or zinc chloride. The insert may be provided with a supply passageway for the inhibiting material and may be provided with an annular shaped flange which may be positioned concentrically with respect to the exiting wire and disposed below said supply passageway, whereby material, such as zinc chloride, may be received on said flange and distributed around the exiting point of the wire from the tinning metal.

3,827,399
APPARATUS FOR EPITAXIAL GROWTH FROM THE LIQUID STATE

Hiroyuki Kobayasi, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma, Osaka, Japan

Continuation of Ser. No. 860,772, Sept. 24, 1969, abandoned.
This application June 14, 1972, Ser. No. 262,529
Claims priority, application Japan, Sept. 27, 1968, 43-70902
Int. Cl. H01l *7/00*
U.S. Cl. 118—64 **2 Claims**



An elongated boat disposed in a furnace tube has a recessed portion to support a substrate, for liquid epitaxial growth thereon, and second and third recessed portions transversely spaced from and longitudinally spaced from, respectively, the substrate supporting recess and adapted to hold liquid materials. The boat is rotatable about an axis parallel to the tube axis and the tube is swingable on an axis normal to said tube axis whereby the materials may be sequentially applied to said substrate.

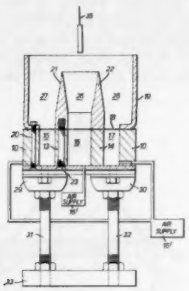
3,827,400
COATING APPARATUS

Julian Pascoe Grenfell, Pyrford, England, assignor to Badalex Limited, Weybridge, England

Filed Oct. 4, 1972, Ser. No. 294,995
Claims priority, application Great Britain, Oct. 5, 1971, 46235/71; May 19, 1972, 23618/72
Int. Cl. B05c *3/09*
U.S. Cl. 118—421 **5 Claims**

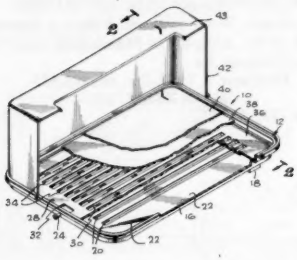
This invention relates to coating apparatus of the type in which an article to be coated is immersed in a main fluidized bed of the coating material. At least one supplementary fluidized bed is provided which contains a supply of additional coating material, the level of the supplementary bed being capable of being raised to a level above that of the main bed whereby additional coating material is transferred from the

supplementary bed to the main bed to replenish the coating material therein. Once the desired level has been achieved,



the level of the supplementary bed is lowered and any surplus coating material is arranged to fall back into the supplementary bed.

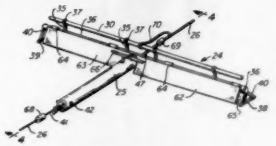
3,827,401
SANITARY RECEPTACLE FOR PETS
Gertrude K. Franzl, 105-25 65th Ave., Forest Hills, N.Y. 11375
Filed Oct. 16, 1972, Ser. No. 297,589
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **12 Claims**



An improved sanitary animal toilet is provided which includes an open topped, hollow self-supporting basin, a porous horizontal platform removably disposed in the basin above its lower end, a porous skid resistant mat removably disposed on the platform and a sheet of disposable porous paper or the like positioned on the mat. The sheet traps feces, while the mat and drainboard allow urine to pass to a drain in the basin below the platform. A basin liner and basin enclosure, the latter for male animals, can also be provided. The basin can be made inflatable for easy use. A carrying or storage case is provided for each model of the receptacle.

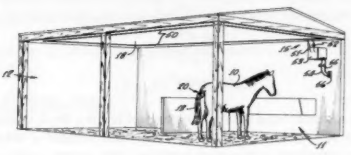
3,827,402
ANIMAL FACILITY
Frank R. Laurenz, P.O. Box 359, Eagle Butte, S. Dak. 57625
Continuation-in-part of Ser. No. 295,594, Oct. 6, 1972, abandoned. This application July 18, 1973, Ser. No. 380,146
Int. Cl. A01k *01/00;* **B65g** *25/08*
U.S. Cl. 119—15 **10 Claims**

The disclosed animal facility comprises an alleyway having a substantially horizontal animal-supporting surface, plus an assembly for discouraging animals from lying down in the alleyway. The assembly comprises a movable elongated electrode means substantially transversely oriented across the alleyway. A scraper for removing dung may optionally be included. Power train means is provided for effecting substantially automatic movement of the electrode means along the alleyway as a substantialy transverse object in proximate relationship above the animal supporting surface. Additionally,



the assembly comprises frame means for supporting the electrode means for its movement, sensing means for detecting an obstruction to the movement of the electrode means, and responsive electrical means actuated in response to the sensing means for sending a jolting charge of electrical energy to the electrode means.

3,827,403
ANIMAL TRAINING DEVICE
Richard C. Meyer, La Habra, Calif., assignor to Arne J. Peterson, Newport Beach and Herold F. Deardorff, Corona, both of, Calif., part interest to each
Filed June 8, 1973, Ser. No. 368,273
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 **15 Claims**

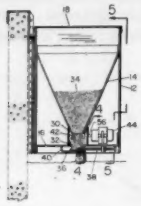


A urination-defecation trainer for animals comprising an energy transmitting means for defining a limited, chosen area, portable means carried by the animal and attached to its tail for sensing the angular orientation thereof and for providing an output when the animal raises its tail while standing. The portable means carried by the animal also receives the transmitted energy in the chosen area, and physically stimulates or shocks the animal. The portable means is responsive to the sensing means and the receiving means for selectively activating the stimulating or shocking means when the animal raises its tail dependent upon the location of the animal relative to the chosen area.

3,827,404
FEEDER DEVICE
Max D. North, Midway, Utah
Filed July 31, 1972, Ser. No. 276,850
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.11 **10 Claims**

An automated feeding apparatus with a solinoid-powered sweeper that scatters controlled amounts of feed from off a platform onto which loose dry feed pours from a hopper above. The sweeper is provided with adjusting threads and

may be a simple stove bolt for easy adjustment of the penetration of the sweep. A timer is also provided to increase or



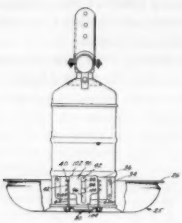
decrease the solinoid activation frequency for further controlling the amount of feed dispensed during a given period as well as dispensing at the desired time of day.

3,827,405

CANISTER BAIL FOR POULTRY FEEDER

Dee Dexter Allen, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,421
Int. Cl. A01k *05/00, 39/00*
U.S. Cl. 119—53 **5 Claims**



A cup-shaped feed pan is suspended from a feed container by a pair of U-shaped bail hooks, the web portion of which is pivotally attached to the pan bottom. The upper ends of the hook arms include a first portion extending inwardly, and a second portion extending laterally outwardly, generally parallel to the web. The container includes similar sets of vertically spaced laterally extending slots interconnected by a vertical slot for receiving the end portions of each arm when the hook is flexed inwardly. When released from being flexed inwardly the ends hook behind the wall of the container thus providing a releasable connection between the hooks and the container. A slideable lock plate prevents unintentional movement of the bail hooks by the poultry.

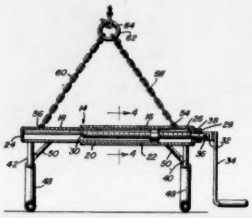
3,827,406

HIP CLAMP AND LIFTING FRAME FOR BOVINE QUADRUPEDS

Avalo A. Berns, R.R. Box 26, Greeley, Iowa 52050

Filed Apr. 11, 1973, Ser. No. 350,066
Int. Cl. A61d *3/00*
U.S. Cl. 119—100 **3 Claims**

A pair of large and small diameter elongated tubular members including a first pair of relatively telescoped ends. The other pair of ends of the tubular members include laterally outwardly projecting rounded open frames disposed in planes generally normal to the longitudinal center lines of the tubular members and the frames project outwardly of corresponding sides of the tubular members. The telescoped end of the small tubular member includes structure defining a central threaded bore opening endwise outwardly of the small tubular member and the free end of the outer tubular member includes end wall defining structure having a threaded bore formed therethrough. An elongated screw member includes a first end journaled through the end wall defining structure of the outer tubular member against axial shifting relative thereto. The other end of the screw member is threadedly engaged in the



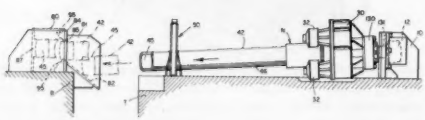
threaded bore and rotation of the screw member will thereby cause extension and retraction of the telescoped tubular members to thus move the frames away from each other and toward each other. The frames are designed for embracedly and clampingly engaging the haunch bones of a bovine quadruped whereby to secure an assemblage to the quadruped which may be lifted to thus lift the rear legs up of the quadruped free of the ground.

3,827,407

TUG/BARGE LATCHING MECHANISM

Andrew Stratienko, Wyndmoor, and Robert J. Kornsey, Hatfield, both of Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed Sept. 4, 1973, Ser. No. 393,913
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 A **12 Claims**



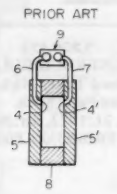
A self-latching self-releasing mechanism for coupling and releasably locking a marine tug to a barge includes, in a preferred form, a non-powered latching mechanism of the keeper type mounted at the aft end of the barge and a power-driven latch coupling mechanism mounted on the fore end of the tug. The power-driven latch coupling mechanism includes a latch bar mounted at the forward end of an elongated tubular nut adapted to be driven forwardly and rearwardly in the axial direction of the tubular nut by a power-driven screw shaft. Provision is made for rotating the tubular nut, and hence the latch bar, through 90°, to effect latching and unlatching. The rearward end of the screw shaft is supported for rotation in the housing of the power drive which in turn is supported for universal movement on a stub mounted in a self-aligning spherical bearing in a support housing mounted on the tug. Axial or translational thrust forces are transmitted through the screw shaft and its power drive housing to the support housing. The power drive and its housing move axially with any axial movement of the screw, and hence are not subjected to the axial thrust forces. Self-latching and self-releasing of the latching mechanism is accomplished and controlled by the direction of rotation of the tubular nut on the screw shaft.

3,827,408

ROTARY COMBUSTION ENGINE

Yoshikazu Ishikawa, Tokyo, Japan, assignor to Nisson Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed May 24, 1973, Ser. No. 363,397
Claims priority, application Japan, June 2, 1972, 47-54974
Int. Cl. F02b *53/04*
U.S. Cl. 123—8.13 **3 Claims**



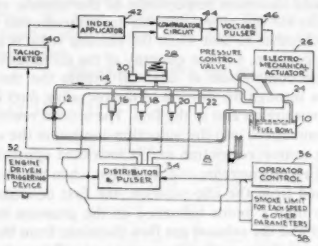
A rotary combustion engine comprising primary and secondary intake ports formed in each of two side walls through which a primary and a secondary air-fuel mixture respectively are supplied into the engine, the primary port being covered by the rotor prior to the secondary port during operational rotation of the rotor.

3,827,409

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Cormac G. O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed June 29, 1972, Ser. No. 267,550
Int. Cl. F02m *5/06*
U.S. Cl. 123—32 EA **8 Claims**



A system is provided for varying the fuel pressure of an internal combustion engine having a common rail system as a function of an engine parameter, such as engine speed or air mass intake.

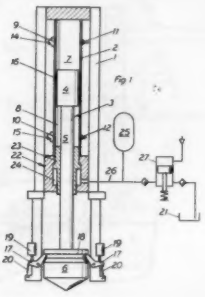
3,827,410

METHOD FOR ACCOMPLISHING A HIGH DRIVING FORCE AT A COMBUSTION GAS DRIVEN IMPACT DEVICE AND AN IMPACT DEVICE FOR CARRYING OUT OF SAID METHOD

Eero Antero Erma, 23 Ottfjallsvagen, 130 21 Klinten; Stig Bertil Arthur Fredin, 14 Hastskovagen, 136 71 Handen; Karl Gosta Lindh, 19 Nytorpsvagen, 191 45 Sollentuna, and Leo Anders Timgren, 12 Dalen, 132 00 Saltsjo-Boo, all of Sweden

Filed Dec. 7, 1972, Ser. No. 313,130
Claims priority, application Sweden, Dec. 13, 1971, 15926/71
Int. Cl. F02b *71/00*
U.S. Cl. 123—46 R **8 Claims**

A method and a device for obtaining high energy impacts mainly for demolishing purposes. In a piston-cylinder device, the cylinder is charged with pressurized combustible gas at both sides of the piston and a rearwardly directed compression stroke is initiated by ignition of the gas volume at the forward end of the piston. At a certain pressure, the compressed gas volume within the rear end of the cylinder is ignited and a forwardly directed working stroke is initiated. The device comprises a gas supply system and two ignition systems, one of which is manually controlled for the compression stroke initiating and the other is a pressure sensitive automatic system for the working stroke initiating. The impact device also comprises a retarding device by which kinetic energy is absorbed from the piston unit at the end of the working strokes.

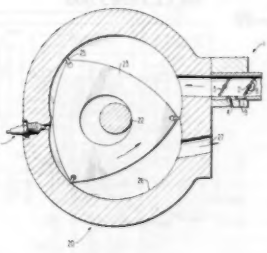


3,827,411

ROTARY PISTON INTERNAL COMBUSTION ENGINE OF TROCHOIDAL CONSTRUCTION

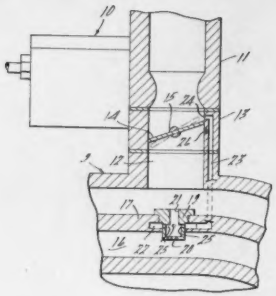
Heinz Lamm, Esslingen-St. Bernhardt, and Lothar Kortner, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Jan. 17, 1972, Ser. No. 218,170
Claims priority, application Germany, Jan. 15, 1971, 2101733
Int. Cl. F02b *33/00*
U.S. Cl. 123—119 R **12 Claims**



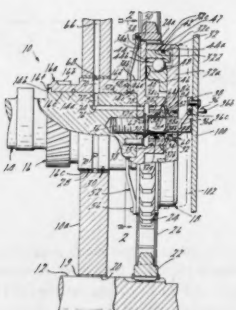
A rotary piston internal combustion engine of trochoidal construction which includes two throttle valves arranged in the inlet channel and an injection nozzle for the injection of fuel which is disposed within the area delimited by the two throttle valves and injects the fuel transversely into the flow of the sucked-in combustion air; both throttle valves are supported in the inlet channel at least approximately centrally thereof whereby the throttle valve disposed closer to the trochoidal space of the engine is supported immovably or in such a manner that it carries out rotary movements in unison with the other throttle valve and in the same direction.

3,827,412
EXHAUST RECIRCULATION
Dennis Carl Waitzman, Southfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Sept. 18, 1972, Ser. No. 289,904
Int. Cl. F02b 33/00; F02m 7/00
U.S. Cl. 123—119 A **16 Claims**



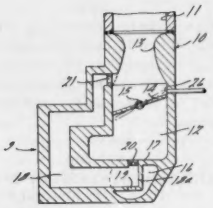
Automobile exhaust gases are recycled by means of a recycling duct which receives these gases at a restricted upstream end located within the environment of the hot gases of the exhaust system, passes in heat exchange relationship through the conventional intake manifold hot spot to facilitate heating of the latter, and discharges the hot exhaust gases at a restricted downstream end in opposition to the inlet flow of the fuel-air mixture at a location directly below the throttle valve. A second restricted duct extends within the sidewall of the carburetor inlet induction conduit and bypasses the throttle valve, opens into the induction conduit upstream of the throttle valve to receive inlet gases during idle, and discharges into the recycling duct between the latter's upstream and downstream restrictions to inhibit exhaust flow through said recycling duct during engine idle operation.

3,827,413
TIMING CONTROL SYSTEM
George B. K. Meacham, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 2, 1973, Ser. No. 337,512
Int. Cl. F02d 37/06
U.S. Cl. 123—99 **31 Claims**



A mechanism for maintaining a predetermined angular phase relation between a distributing device and a crankshaft in an internal combustion engine of the type employing an apparatus for varying the timed angular phase relation between the engine crankshaft and camshaft. This mechanism, in one disclosed embodiment, comprises a device drivingly interconnecting the camshaft and the crankshaft and operative to vary the angular phase relationship therebetween, a distributor drive gear journaled on the camshaft, and a spider driving the distributor drive gear in a constant angular phase relationship with the crankshaft irrespective of varying phase relationships between the camshaft and the crankhaft. Several other mechanisms are also disclosed.

3,827,414
EXHAUST RECIRCULATION
Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Sept. 21, 1972, Ser. No. 291,115
Int. Cl. F02b 33/00; F02m 7/00
U.S. Cl. 123—119 A **17 Claims**

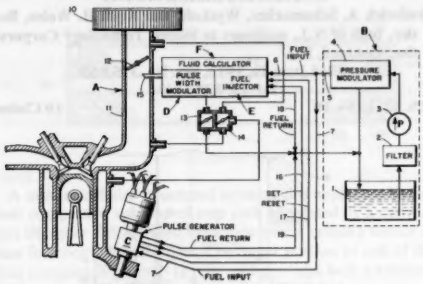


Automobile engine exhaust gases are recycled through a recycling duct having a restricted upstream end opening into the exhaust system and first and second restricted downstream ends opening into the carburetor inlet induction conduit downstream and upstream respectively of the throttle valve. The restrictions for the recycling duct are dimensioned with respect to each other so that when the throttle valve is at its closed or idle position, a major quantity of the air required to support engine combustion at idle will bypass the throttle valve and flow through the portion of the recycling duct from the second downstream end to the first. The second restricted downstream end opens into the induction conduit at the usual fuel metering venturi restriction and is restricted appreciably less than the first downstream end, such that when the throttle valve is opened from the idle position, the first downstream end will have only a minor influence on the pressure in the recycling duct and the exhaust gas flow thereinto from the exhaust conduit via the restricted upstream end will be substantially a function of the pressure differential between the exhaust pressure at the upstream end and the venturi pressure at the second downstream end. The induction conduit pressure immediately upstream of the upstream leading edge of the blade of the throttle valve, when the latter is at its idle position, is employed to operate a valve to close the recycling duct completely at a location upstream of the two downstream ends during both idle and wide open throttle operation of the engine.

3,827,415
FUEL SUPPLY DEVICE FOR INTERNAL COMBUSTION ENGINES
Takayuki Makino, Okazaki; Shinya Ishii, and Rokuji Ohkubo, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed Oct. 7, 1971, Ser. No. 187,298
Claims priority, application Japan, Nov. 7, 1970, 45-97562
Int. Cl. F02m 7/00; F02d 31/00
U.S. Cl. 123—119 R **7 Claims**

A fuel supply device for internal combustion engines, comprising a rotating pulse generating means and a fluid calculat-

ing means having a pulse-width modulating means and a fuel injection means. The rotating pulse generating means comprises a pulse generator and a fluid element for shaping wave forms and utilizes liquid fuel as a medium to produce pulse signal conforming to the fuel injection timing in accordance with the number of engine revolution. The pulse-width modulating means comprises a variable liquid resistor adapted to throttle the pulse signal in conformity with the internal pressure in an intake manifold, and further comprises a fluid ele-



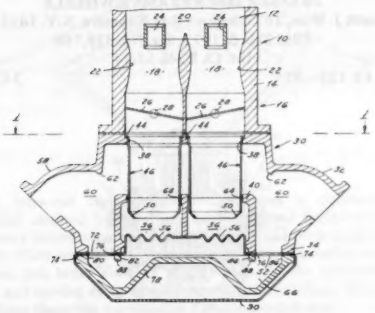
ment for controlling pulse width which is set by the pulse signal and is reset by the throttled signal obtained from the variable liquid resistor. Thus, the pulse-width modulating means is adapted to modulate the pulse signal conforming to the fuel injection timing to provide a control pulse having a width which better corresponds with the fuel injection timing. The fuel injection means comprises a fluid element for fuel injection and supplies fuel to the downstream side of a throttle valve in the intake manifold in accordance with the control pulse signal having the modulated pulse width.

3,827,416

QUICK-HEAT ENGINE INTAKE MANIFOLD

William R. Ader, Westland, and Richard P. Krygowski, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1973, Ser. No. 357,307
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 A **6 Claims**



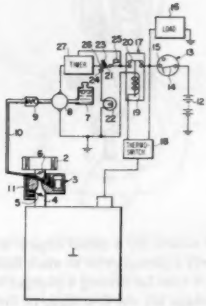
The central portion of the intake manifold plenum is separated from the carburetor throttle riser bores by a branch of an exhaust gas crossover passage and joined together by a thin high heat transfer sheet metal tube that passes through the passage with the resultant heating and evaporation of liquid fuel in the tube; a second branch of the crossover passage passes out of the manifold and beneath a second thin sheet metal high heat transfer plate directly under the tube to further evaporate liquid fuel splashed against the plate from the tube.

3,827,417

COLD STARTING DEVICE FOR USE IN AN INTERNAL COMBUSTION ENGINE

Yasuyuki Morita, Hiroshima, Japan, assignor to Toyo Kogyo Company Limited, Hiroshima, Japan

Filed Nov. 30, 1972, Ser. No. 310,734
Claims priority, application Japan, Nov. 30, 1971, 46-112913
Int. Cl. F02n *17/00*; **F02m** *3/04*
U.S. Cl. 123—127 **8 Claims**



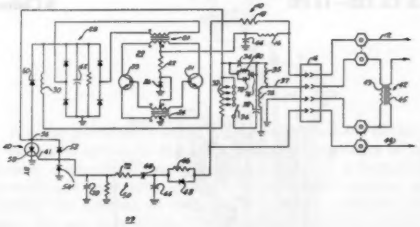
A cold starting device for use in an internal combustion engine which supplies starting liquid such as oil to the air intake system between a choke valve and a throttle valve of the engine before cranking of the engine in order to assist in starting the engine in winter, by increasing engine compression.

3,827,418

CAPACITIVE DISCHARGE IGNITION SYSTEM HAVING INDUCTOR IN PARALLEL WITH IGNITION COIL

Christopher A. Jacobs, 3570½ Eagle Rock Blvd., Los Angeles, Calif. 90065

Continuation-in-part of Ser. No. 866,626, Oct. 15, 1969, Pat. No. 3,716,037. This application Nov. 29, 1972, Ser. No. 310,364
Int. Cl. F02p *1/00*
U.S. Cl. 123—148.0 CD **2 Claims**

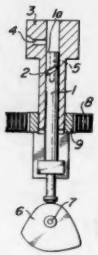


An ignition system for internal combustion engines utilizing a capacitive discharge to supply energy to the spark plugs. The charging and discharging of the capacitor is controlled by a circuit utilizing a silicon controlled rectifier (SCR) which operates in response to the engine controlled switching means for turning on and in response to positive back-biasing for turning off. The system includes an inductor connected in parallel circuit relationship with the ignition coil for providing sufficient SCR back-biasing inductance in the circuit in the event of any real or apparent changes in ignition coil characteristics.

3,827,419
FUEL INJECTION MEANS FOR A DIESEL ENGINE

Takuji Isomura, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Continuation-in-part of Ser. No. 889,066, Dec. 30, 1969. This application Aug. 13, 1971, Ser. No. 171,597
Int. Cl. F02b *3/00*; F02m *39/00*
U.S. Cl. 123—32.6 6 Claims

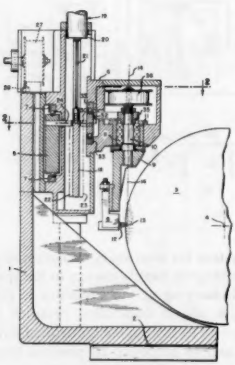


Fuel injection means for a diesel engine in which a portion of fuel is auxiliarily injected prior to main fuel injection during engine starting. A cam for driving a plunger of a fuel injection pump has a two stage lift, the first stage of the lift being for the main fuel injection and the second stage being for the auxiliary fuel injection. After the end of the first stage, the height of the top dead center of the first stage is maintained constant for a predetermined angle of rotation of the cam, and thereafter the second stage comes into operation. A pump plunger is provided with a slanted groove for terminating fuel injection, the groove being so arranged that, during normal operation of the engine, it comes to open to a fuel intake and out put port formed in a pump cylinder at the first stage of the cam lift, and during engine starting it does not open to said furl intake and out put port until the second stage is reached.

3,827,420
GRINDING WHEEL DRESSING APPARATUS

Nils O. Hoglund, Short Hills, N.J., assignor to Hoglund Engineering and Manufacturing Company, Inc., Berkeley Heights, N.J.

Filed Feb. 28, 1972, Ser. No. 230,024
Int. Cl. B24b *53/08*
U.S. Cl. 125—11 PH 8 Claims

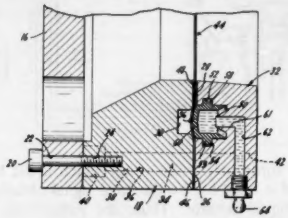


A wheel dressing apparatus for dressing the periphery of a grinding wheel with a cutter mounted for following the straight and curved periphery of the grinding wheel. One cam is included for cross-feeding the cutter transversely of the periphery of the grinding wheel and a second cam produces pivoting movement of the cutter along a curved path having a component directed radially of the grinding wheel. The second cam also maintains the cutter normal to the periphery of the grinding wheel as it is pivoting.

3,827,421
HYDRAULIC BLADE MOUNT

Frederick A. Schumacher, Wyckoff, and Keith H. Wolos, Butler, both of N.J., assignors to Silicon Technology Corporation, Oakland, N.J.

Filed June 29, 1973, Ser. No. 375,038
Int. Cl. B28d *1/04*
U.S. Cl. 125—15 10 Claims

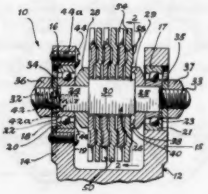


An inside diameter cutting blade is mounted in a circular saw blade housing. The cutting blade is tensioned by pressurized hydraulic fluid within a channel which causes a fluid-tight gasket in the channel to bear against and tension the outer circumference of the blade. Accurate and uniform tensioning of the cutting blade is accomplished by the pressure of the hydraulic fluid, which uniformly deforms the gasket. The hydraulic fluid is water soluble and permits easy clean-up should any of the fluid leak past the gasket. The use of a bleed fitting permits total release of tensioning pressure, required during blade changes without complete removal of tensioning fluid thus permitting return to full blade tensioning pressure in greatly reduced time.

3,827,422
DRESSER FOR ABRASIVE WHEELS

Kenneth J. Wise, 167 Glencove Rd., Kenmore, N.Y. 14223

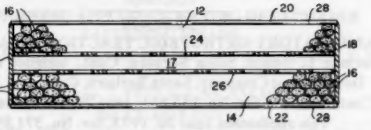
Filed Feb. 5, 1973, Ser. No. 329,758
Int. Cl. B24b *53/14*
U.S. Cl. 125—37 3 Claims



A dresser including a nest of cutter discs having teeth arranged about their periphery, central openings for loosely receiving a supporting shaft and partially interfitting projections and recesses arranged in an annular area thereof in close proximity to the roots of the teeth. End washers are employed to exert pressure on the discs in a direction axially of the supporting shaft in an annular area thereof intermediate the central openings and the projections and recesses, whereby to resiliently deform certain of the discs in order to impart rigidity to the nest of discs both radially and annularly thereof.

3,827,423
UNITARY CELLULAR-STRUCTURED COOKING FIRE APPARATUS

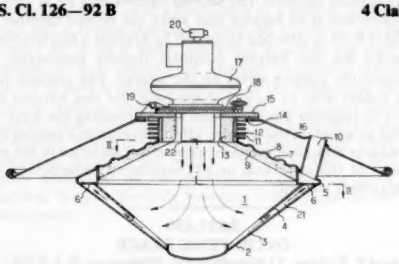
Walter J. Bolitho, 30005 W. Thirteen Mile Rd., Farmington, Mich. 48024

Filed July 5, 1972, Ser. No. 269,123. The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.
Int. Cl. A47j *37/07*
U.S. Cl. 126—29 3 Claims

A unitary cellular structured cooking-fire appliance having dual compacted volumes of trap rock separated by a convection chamber is positioned broadside over a primary source of heat for cooking the edibles. The upper portion or cell of the dual compacted volumes of trap rock provides both a substantially uniform temperature cooking surface and a non-combustible collector and absorber of liquid animal fats and the lower spaced apart portion or cell of trap rock is capable of being heated to incandescence, is positioned over the primary source of heat for acting as a distributor of the heat generated from the primary source of heat to the whole area of the cooking surface.

3,827,424
RADIANT HEATERS

Gabriel Brola, 4, Avenue Victor Hugo 94, Nogent-sur-Marne, France

Filed Jan. 22, 1973, Ser. No. 325,605
Claims priority, application France, Mar. 6, 1972, 72-08554
Int. Cl. F24c *3/04*
U.S. Cl. 126—92 B 4 Claims



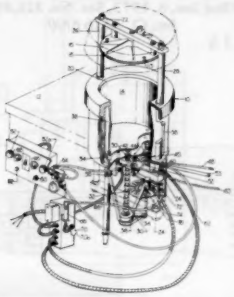
An infra-red radiant heater comprises a combustion chamber defined by two oppositely-directed frusto-conical members joined together at their bases. A burner is supported by one of the members and the other member has radial corrugations, this latter member being heated by the combustion gases and serving as an emitter of infra-red radiation. The corrugations direct the combustion gases towards a vent.

3,827,425
COOKING METHOD AND APPARATUS

Harry D. Forse, and Eldon W. Brown, both of Anderson, Ind., assignors to Food-Quik Products, Inc., Anderson, Ind.

Filed Dec. 3, 1970, Ser. No. 94,682
Int. Cl. A47j *27/06*
U.S. Cl. 126—369 2 Claims

Cooking apparatus including a sealable chamber adapted to contain a food article which is indirectly heated by a steam jacket surrounding the chamber. An inlet valve is provided for pressurizing the cooking chamber with steam, and an adjustable vent valve is provided which in conjunction with the inlet valve permits a controlling of the pressure within the chamber and the flow of steam therethrough, thereby regulating moisture content and transfer of heat energy.

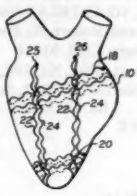


Method of cooking wherein a food article is heated in a pressurized atmosphere having a constant flow of steam therethrough; after the article is fully cooked under these conditions, the pressurized atmosphere may be exhausted and the food article indirectly heated to remove surface moisture.

3,827,426
PROSTHETIC PUMP

Mark Page, 29 Burbury Ln., Brooklyn, N.Y. 11020, and Philip N. Sawyer, 606 3rd St., Brooklyn, N.Y. 11215

Filed July 16, 1971, Ser. No. 163,372
Int. Cl. A61b *19/00*; A61f *1/24*
U.S. Cl. 128—1 D 11 Claims



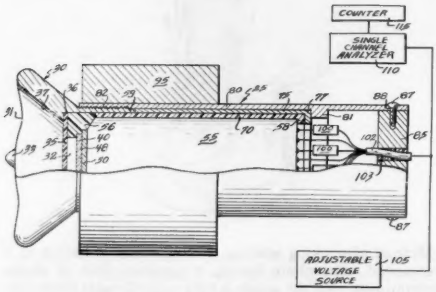
A pump particularly suited for use as a prosthetic device in a biological system to replace a pumping component of said system; a novel electro-mechanical transducer; a method for providing a prosthetic pump in a biological system; and method for forming an electrically actuated contractile element for use on a pump. The pump is formed of a resilient sidewalled chamber with exterior and interior surfaces contoured in the shape of the component to be replaced. The walls of the chamber are provided with one or more contractile elements arranged so that upon contraction of said elements the chamber will be contracted. A preferred contractile element is formed of a titanium-nickel alloy such as Nitinol selected from the class of binary equiatomic compounds of transition elements from group IV and group VIII. By arranging the Nitinol secured in a stressed orientation with respect to the chamber wall, subsequent application of current pulses to the wire will produce a heating of the Nitinol wire returning the wire to its original unstressed shape, thereby contracting the the chamber wall to produce pumping. The pump has particular application as an artificial heart.

3,827,427

APPARATUS FOR MEASURING RADIOACTIVITY IN THE HUMAN EYE

Glenn F. Knoll, Ann Arbor, Mich., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 8, 1973, Ser. No. 321,595
Int. Cl. A61b *6/00*
U.S. Cl. 128—2 A **6 Claims**



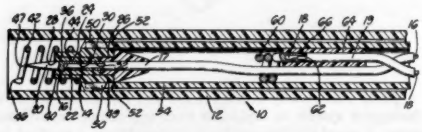
Measurement of radioactivity in the human eye is facilitated by affixing an eye cup to a radiation detector to maintain a precisely repeatable position of the detecting element with respect to the eye. This apparatus is particularly useful in the diagnosis of ocular melanoma in patients who have ingested a radioactive chemical that is concentrated in an ocular melanoma. Such precisely repeatable positioning of the radiation detector allows use of smaller doses of the radioactive tracer, thus minimizing the radiation hazard to the patient.

3,827,428

BIPOLAR ELECTRODE STRUCTURE FOR MONITORING FETAL HEARTBEAT AND THE LIKE

Edward H. Hon, and Robert W. Hon, both of 11 Bradbury Hills Rd., Bradbury, Calif. 91010

Continuation-in-part of Ser. No. 108,034, Jan. 20, 1971. This application Dec. 4, 1972, Ser. No. 311,764
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **26 Claims**



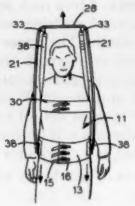
An improved electrode system for monitoring fetal heartbeat includes a curved guide tube adapted to be inserted through the vagina and cervix of a woman in labor, a retaining coil mounted on a holder member which is slidably disposed in the guide tube, a flexible driving tube adapted to rotate the holder member to screw the retaining coil into a fetal epidermis and two spaced electrodes which are adapted to be electrically connected to a suitable apparatus for monitoring fetal heartbeat. In the first disclosed embodiment of the invention one of the electrodes is a pointed member mounted in the holder which mounts the retaining coil. The retaining coil, when screwed into the fetal epidermis, maintains the pointed first electrode in piercing engagement with the fetus. In the second disclosed embodiment the retaining coil and the first electrode are one and the same structure; i.e., the first electrode is in the form of a coil which is adapted to screw into the fetal epidermis. In both of the embodiments disclosed the second electrode is spaced from the first electrode and electrical contact between the two electrodes is established by vaginal and cervical secretions of the woman in labor. Driving connection between the holder member and the flexible driving tube is provided by slots in the forward end of the driving tube and fin means on the holder. In the second embodiment disclosed the second electrode is in the form of a flat member mounted on the rear end of the holder and serves as the fin means.

3,827,429

AMBULATORY ORTHOPEDIC TRACTION APPARATUS

Norman L. Heikes, Santa Barbara, Calif., assignor to Pantec Development Company, Santa Barbara, Calif.

Continuation of Ser. No. 154,941, June 21, 1971, abandoned. This application June 20, 1973, Ser. No. 371,895
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **9 Claims**



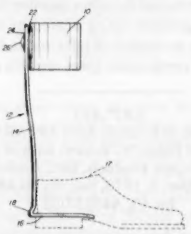
This disclosure relates to traction apparatus designed particularly for the treatment of afflictions of the spinal column. It provides a resilient bowed member adapted to be connected between a belt-like harness to be worn about the lower torso of a patient to be treated and another harness which is also worn by the patient in a region upwardly spaced from the other harness element. The second harness may be at various locations and is so located that when the bowed member of resilient form is attached there will be exerted a tractive force between the two harness members thereby continually to maintain the tractive effect on the wearer. The resilient harness holder with its bowed shape pulls the two harness elements in opposite directions and while providing the force essential to maintain the tractive effect nevertheless assures that the wearer may have mobility without any sacrifice of the usefullness of the apparatus or any significant reduction in the curing effect thereof.

3,827,430

ORTHOPEDIC BRACE

Michael F. Fadden, 11 Hamilton Ct., Whippany, N.J. 07981

Filed Jan. 4, 1973, Ser. No. 321,080
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 E **8 Claims**



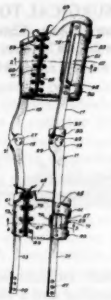
The specific embodiment provides an orthopedic foot brace comprising a shank member having an elongated vertical por-

tion and a shoe engaging portion at the lower end of the vertical portion. The shoe engaging portion is biased upwardly about a pivot point at the lower end of the vertical portion. An elongated vertical slot is provided at the upper end of the vertical portion, and a calf engaging member is slidably mounted in the slot.

3,827,431
ORTHOPEDIC APPLIANCE HAVING DETACHABLE FASTENING MEANS

Ignatius Richard Pecorella, 183 Norwood Ave., Buffalo, N.Y. 14222

Filed Apr. 3, 1972, Ser. No. 334,911
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 F **10 Claims**



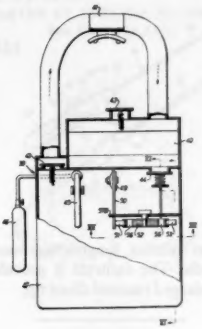
An orthopedic appliance includes a pad member adapted to hold the appliance onto a limb, such as a human leg or arm, which pad is readily removable from the appliance and easily installed on it. In a highly preferred structure the pad has fastened to it a plurality of channel or similar members adapted to hold it to brace portions of the orthopedic device in proper position when the pad is laced or otherwise fastened about the limb. Yet, although the pad can be removed readily for washing it will not fall off the appliance, even when the orthopedic device is not held to the limb. Also, it may be readily reinstalled on the appliance without the need for snapping, tying or similarly fastening it into place on the appliance parts.

3,827,432
BREATHING APPARATUS

Claes E. G. Lundgren, Lund, and Stig L. Akesson, Malmo, both of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Aug. 20, 1971, Ser. No. 173,605
Claims priority, application Sweden, Aug. 24, 1970, 11489/70
Int. Cl. B63c *9/00*; **A61m** *16/00*
U.S. Cl. 128—142.2 **15 Claims**

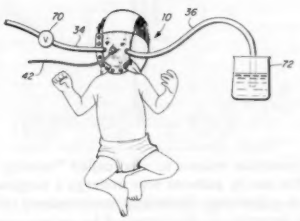
A breathing apparatus of the type having a rebreathing system from which the user inhales and into which he exhales and which receives fresh gas making up for consumed oxygen. The rebreathing system alternately operates as a fully closed system and a fully open system; it operates in the closed mode during a series of breaths until the oxygen in the system has been consumed, and then it operates in the open mode to permit exhalation to the ambient medium. The switching of the system between the open and closed modes is effected in dependence on the volume of gas inhaled, or the number of inhalations made, during the course of the series of breaths, and the volume of gas exhaled, or the number of exhalations, to the ambient medium.



3,827,433
RESPIRATORY DEVICE AND PROCEDURE

Daniel C. Shannon, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 7, 1972, Ser. No. 232,428
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.5 **9 Claims**



Applying positive end expiratory pressure breathing assistance to, for example, an infant by enclosing the infant's face in a gas-tight mask, providing inhalation air into the mask, and restricting the passage for exhaled air from the mask, such as by immersing the end of the passage in a liquid, to maintain a positive pressure above ambient pressure in the passage, and hence within the mask.

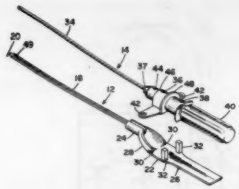
3,827,434
CATHETER INSERTION DEVICE

Thomas C. Thompson, Dallas, and John A. Gula, Farmers Branch, both of Tex., assignors to Vicra Sterile, Inc., Dallas, Tex.

Filed June 21, 1972, Ser. No. 264,888
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **4 Claims**

A catheter insertion device having a needle assembly comprising a hollow slotted needle with a needle hub affixed to its proximal end and a catheter assembly comprising a flexible catheter having a sealing segment with an enlarged outside diameter to prevent bleedback and a hollow catheter hub

secured to its proximal end, the two assemblies being releasably locked together to prevent relative longitudinal movement of the catheter in the needle, the locking being

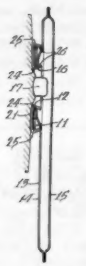


releasable without relative longitudinal movement of the catheter and needle. The catheter is provided with a wire stylet having an enlarged rounded distal tip.

3,827,435
DISPOSABLE OSTOMY POUCH WITH VARIABLE MEANS

Arthur E. Marsan, 6700 Escondido Dr., 4-B, El Paso, Tex. 79912

Filed Apr. 19, 1973, Ser. No. 352,563
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **3 Claims**



This invention relates to a so-called "ostomy" pouch intended for use by patients who undergo a surgical procedure known as colostomy, ileostomy, ureterostomy, ileal bladder, etc. The invention is characterized by an improved construction capable of low cost of manufacture whereby it is economical for disposal after a single use and is featured by its adaption to varying its positioning on the patient so that it may be used while the patient is in a vertical ambulatory position for walking, running, sitting, or standing, or in bed in a horizontal position. Another feature is a channeled gasket, a supplement which has improved functions in the use of the pouch.

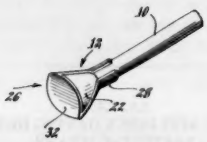
3,827,436
MULTIPURPOSE CRYOSURGICAL PROBE

Joseph G. Stumpf, Fairfield, and Joseph F. Andera, Trumbull, both of Conn., assignors to Frigitronics of Conn., Inc., Shelton, Conn.

Filed Nov. 10, 1972, Ser. No. 305,359
Int. Cl. A61f *7/00*; **A61b** *17/36*
U.S. Cl. 128—303.1 **6 Claims**

A cryosurgical probe having a refrigerated tip with a plurality of surfaces. The surfaces are differently shaped and positioned to facilitate treatment of different bodily tissues. A plurality of insulating sleeves are provided to fit over the probe tip. Each sleeve defines an opening which is positioned to expose a different one of the surfaces.

The foregoing abstract is not to be taken either as a complete expostion or as a limitation of the present invention. In order to understand the full nature and extent of the techni-

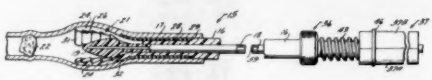


cal disclosure of this application, reference must be had to the following detailed description and the accompanying drawing as well as to the claims.

3,827,437
SURGICAL TOOL

Yoshio Inaba, 506 Dixmyth Ave., Cincinnati, Ohio 45220

Filed June 20, 1973, Ser. No. 371,864
Int. Cl. A61b *17/22*; **A61m** *29/00*
U.S. Cl. 128—328 **4 Claims**

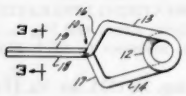


A surgical tool which includes a first elongated tubular member of flexible material and a second elongated member slidably mounted thereinside. Lengthwise extending circumferentially spaced slits are provided in a head end portion of the first elongated member dividing the head end portion into a plurality of jaws. A head on the second elongated member can be retracted between the jaws to cause the jaws to diverge. A resilient band surrounds portions of the jaws remote from the head end of the first elongated member so that when the head is further retracted until the head is inboard of a head end of the resilient band, the resilient band causes the jaws to close.

3,827,438
ANEURYSM CLIP

George Kees, Jr., P.O. Box 113, Alexandria, Ky. 41001

Filed July 10, 1972, Ser. No. 269,986
Int. Cl. A61b *17/12*
U.S. Cl. 128—346 **2 Claims**



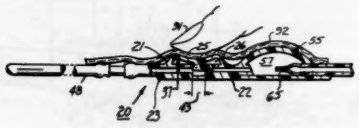
A one-piece aneurysm clip formed from an elongated spring metal ribbon having a central helical portion, diverging first connecting portions extending from the helical portion, and converging second connecting portions extending from the first connecting portions. The axis of the helical portion extends transversely of a major crosswise axis of the ribbon. The jaws are turned 90 degrees from the plane of the helical portion and are arranged to engage flatwise, spring action of the helical portion urging the jaws to engaged position.

3,827,439

PLUG VALVE FOR PHYSIOLOGICAL SHUNT SYSTEMS

Rudolf R. Schulte, Santa Barbara, Calif., and Harold D. Portnoy, Bloomfield Hills, Mich., assignors to Heyer-Schulte Corporation, Goleta, Calif.

Filed Oct. 30, 1972, Ser. No. 302,181
Int. Cl. A61m 27/00
U.S. Cl. 128—350 V 19 Claims



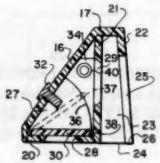
A valve utilizing a mechanically retainable plug for the stoppage of drainage flow through a shunt system installed in a human body. The valve includes a valve body with an internal cavity and a first and a second port entering the cavity. These ports are connected to conduits which conduct fluids to be drained, for example, to a catheter and to a shunt tube. A valve seat is formed peripherally around one of the ports so that fluid flowing through this respective port passes through the valve seat. A plug is supported in the cavity so as to be movable toward and away from this port. The plug has a set of dimensions which is oversized relative to the valve seat so as to form a fit which will hold the plug in said port to close the valve at the valve seat. A compressible reservoir may be connected to one of the ports to function as a source of elevated pressure for the valve to remove the plug from the port. A check valve may be utilized with the reservoir to prevent backflow out of the reservoir when it is compressed. The valve may discharge into a shunt, which shunt may include a check valve that prevents reverse flow of fluids into the system.

3,827,440

CHECK-VALVE FOR TRACHEOTOMY TUBES

Arthur I. Birch, 6178 S. Windemere Way, Littleton, Colo. 80102, and Darrell E. Brown, 4994 E. Geddes Ct., Littleton, Colo. 80122

Filed Jan. 18, 1973, Ser. No. 324,731
Int. Cl. A61m 16/00
U.S. Cl. 128—351 13 Claims



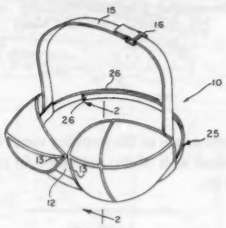
A removable check-valve for installation on the external portion of a tracheotomy tube including a housing containing a free-floating, flat type disc for opening and closing the tracheotomy tube during the breathing cycle regardless of the body position of the user. An auxiliary port may be provided on the housing for supplying supplemental oxygen continuously to the user without direct loss of oxygen to the atmosphere.

3,827,441

BRASSIERE CONSTRUCTION FOR THE HANDICAPPED

Lois K. Rudolph, 104-B Parkview Apts., Collings Ave., Collingswood, N.J. 08107

Filed Oct. 10, 1972, Ser. No. 296,300
Int. Cl. A41c 3/00
U.S. Cl. 128—425 6 Claims



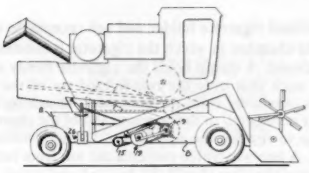
A pair of connected breast cups, a flexible strap extending from the breast cups for engagement about a wearer's neck, and an arcuate stay extending from the breast cups for retaining engagement about the wearer's torso.

3,827,442

COMBINE CONTROL

Robert H. Scholz, Box 714, Thornton, Wash. 99176

Filed Mar. 21, 1973, Ser. No. 343,279
Int. Cl. A01f 7/00
U.S. Cl. 130—24 6 Claims



A fan speed control for hillside combines. The tendency of crop materials to move more quickly or more slowly along the cleaning shoes of a combine in response to uphill or downhill inclination of the combine is compensated by speed variation in the fan or blower that moves the materials over the pans. Fan speed is controlled by a mechanical linkage connecting an upright pendulum and a variable speed drive to the fan. The pendulum and associated linkage are calibrated to increase fan speed during downhill travel and to decrease fan speed during uphill travel, thereby substantially normalizing the movement of the crop materials over the cleaning shoes or pans for all such attitudes of the combine.

3,827,443

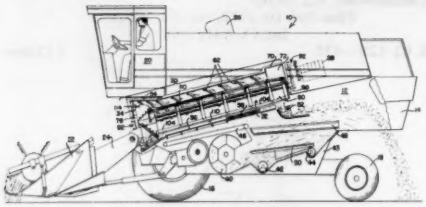
CONICAL TRANSITION

T. Gary Drayer, Silvis, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,206
Int. Cl. A01f 12/18
U.S. Cl. 130—27 T 11 Claims

An axial flow combine of the type embodying threshing and separating means in the form of a cylindrical casing within which a rotor operates and which defines a threshing region and a separating region. A funnel-like frusto-conical extension at the forward end of the casing is provided with internal heli-

cal transport fins and cooperates with a vaned impeller on the rotor to move the crop material rearwardly into the threshing



region, the outer edges of the impeller vanes sweeping around the frusto-conical wall of the extension in close coextensive proximity thereto.

3,827,444

COMBINED CIGARETTE HOLDER AND ASH RECEPTACLE

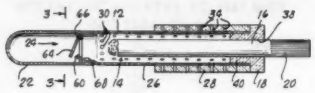
Yusuff Mohammed Khan, 3 Hobson St., San Fernando, Trinidad And Tobago

Filed June 28, 1973, Ser. No. 374,775

Claims priority, application Trinidad And Tobago, June 30, 1972, 65/72

Int. Cl. A24f *13/16*

U.S. Cl. 131—174 **2 Claims**



A combined cigarette holder and ash receptacle comprises a cigarette chamber in which the cigarette is substantially entirely enclosed. A clamp holds the cigarette firmly within the chamber such that only the non-lighted tip of the cigarette protrudes outwardly from the chamber. An ash receptacle is releasably connected to the opposite end of the chamber from the clamp to receive the ash formed during smoking of the cigarette. A one-way valve prevents the ash from returning to the cigarette chamber should the device be inverted.

3,827,445

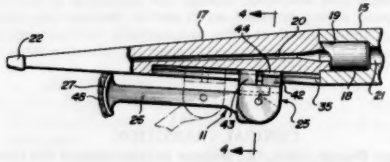
ADJUSTABLE CHIN REST FOR SMOKERS PIPES

Harold W. Dahly, 4859 N. Paulina St., Chicago, Ill. 60640

Filed July 2, 1973, Ser. No. 375,342

Int. Cl. A24f *13/22*

U.S. Cl. 131—186 **4 Claims**



A chin rest mountable on a pipe including a support member slidably associated with the mouthpiece, an arm pivotally connected to the support member and terminating at its free end with a chin plate, wherein the arm extends at an angle to the mouthpiece of the pipe when the chin plate engages the chin of the smoker, and the relative location of the chin rest along the length of the mountpiece may be adjusted to fit the smoker.

3,827,446

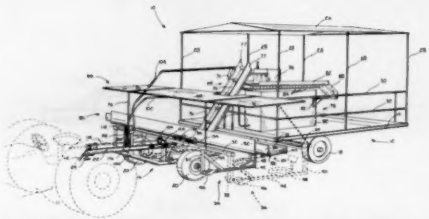
FRUIT AND VEGETABLE HARVESTING DEVICE

Bass Honeycutt, Rt. 5, Clinton, N.C. 28328

Filed Dec. 1, 1972, Ser. No. 311,121

Int. Cl. B08b *3/02*

U.S. Cl. 134—63 **11 Claims**



A fruit and vegetable harvesting device including a mobile frame structure adapted to be towed by a tractor having a power takeoff associated therewith. The mobile frame structure includes a plurality of laterally spaced and transversely aligned picking stations disposed on the forward portion thereof with each picking station including a seat structure supported in close proximity to the ground such that an individual worker seated thereon may pick the randomly disposed fruit or vegetables growing therebeneath as the mobile frame structure traverses the field. The mobile frame structure further includes a conveyor system for conveying the individual picked fruit or vegetables from the various picking stations to a unitized washing and grading facility disposed on the mobile frame structure.

3,827,447

METHOD AND COMPOSITION FOR REDUCING THE FRICTIONAL DRAG OF FLOWING FLUIDS

Dale J. Meier, El Cerrito, Calif., and Vitold R. Kruka, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Division of Ser. No. 204,357, Dec. 2, 1971. This application Dec. 12, 1973, Ser. No. 424,147

Int. Cl. F17d *1/16*

U.S. Cl. 137—13 **3 Claims**

The flow properties of non-aqueous liquids are improved by the incorporation thereinto of hydrogenated polyisoprene.

3,827,448

SUB-SEA PIPELINE TAPPING DEVICE

Richard O. Alba, 3804 Kent St., Metairie, La.

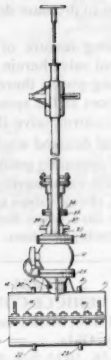
Filed Jan. 3, 1972, Ser. No. 214,821

Int. Cl. B23b *41/08;* **F16e** *41/04*

U.S. Cl. 137—15 **2 Claims**

The present invention provides a device for tapping a pipeline submerged in water and while in service. The present device comprises pipe saddle means adapted to fit around and clamp over a given submerged pipeline to be tapped. The pipe saddle is adapted for injection of an epoxy resin therein to form a fluid tight seal between the pipe and the saddle. The saddle is also provided with a side outlet to which full flow through valve means is operably connected. Pipe tapping or drilling means are in turn provided for connection to the valve means whereby when said valve means is in a fully open position, the drilling head of the drilling means can be inserted

through the valve and side outlet of the pipe saddle into contact with the pipe to be tapped. The tapping means further



comprises a packing assembly for sealing off the tapping subassembly upon drilling through the pipe, as well as means for controlling the exact depth of drilling.

3,827,449

AUTOMATIC MECHANISM FOR THE DISCHARGE OF FLUID IN A PRESSURIZED SYSTEM

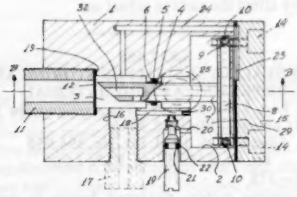
Luis Gurizzan; Alberto Gurizzan, both of 26 de Julio No. 122, Bernal, Buenos Aires; Modesto Albin Sayavedra, 25 de Mayo No. 170; Luis Alberto Otamendi, Ascasuhi No. 76, both of Quilmes, Buenos Aires, and Pedro Antonio Mulas, Lamadrid No. 1570, Bernal, Buenos Aires, all of Argentina

Filed Dec. 29, 1972, Ser. No. 319,190

Claims priority, application Argentina, Feb. 11, 1972, 240508

Int. Cl. F16k *17/14, 17/40*

U.S. Cl. 137—68 **3 Claims**



A mechanism for automatically releasing a pressurized fluid includes a slidable piston to puncture a seal normally closing the fluid outlet, the piston being controlled by the pressure differential between fluids on opposite sides of a cylinder and normally equalized by communication with the pressurized fluid: actuation of the piston results from exposure of one side of the cylinder to atmospheric pressure.

3,827,450

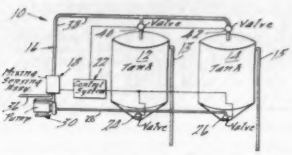
AUTOMATIC CONTROL FOR DEBRINING RELISH STOCK AND OTHER MATERIALS

Melvin E. Leverenz, and Kenneth H. Leverenz, both of St. Clair, Mich., assignors to Diamond Crystal Salt Company, St. Clair, Mich.

Continuation-in-part of Ser. No. 42,836, June 2, 1970, Pat. No. 3,710,811. This application Sept. 29, 1972, Ser. No. 293,417The portion of the term of this patent subsequent to Jan. 16, 1990, has been disclaimed.

Int. Cl. G05d *11/08, 11/13*

U.S. Cl. 137—88 **6 Claims**



An improved system for accurately debrining relish stock, other food stock materials, or like materials requiring automatically controlled debrining.

3,827,451

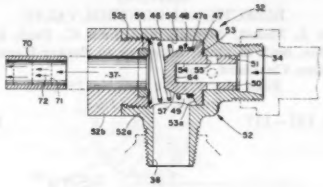
QUICK RELEASE VALVE

Elwood I. Roob, Parma, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

, Division of Ser. No. 127,691, March 24, 1971, Pat. No. 3,734,258. This application May 21, 1973, Ser. No. 361,912

Int. Cl. F16k *11/00;* **F16d** *25/04*

U.S. Cl. 137—102 **6 Claims**



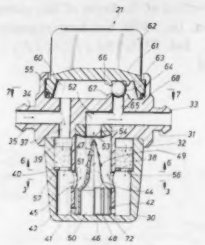
A drive for transmitting torque from a driving to a driven member includes an inflatable member which is adapted to connect the driving and driven members when inflated by a fluid under pressure. The drive includes a valve assembly having an inlet connected to a fluid supply, a first outlet in communication with the inflatable member and a second outlet for venting the inflatable member. The valve assembly has a movable valve member which has a first position for restricting fluid flow between the inlet and the first and second outlets while providing for fluid communication between the first and second outlets. When fluid is supplied under pressure to the inlet, the valve member has a surface area against which the fluid acts to move the valve member from the first position to a second position. In the second position, the valve member restricts fluid flow between the first and second outlets while providing for fluid communication between the inlet and the first outlet which effects inflation of the inflatable member, resulting in the driving and driven members being drivingly connected thereby. A muffler may be utilized in connection with the second outlet to control the level of noise associated with the operation of the valve.

3,827,452

AUTOMATIC SHUT-OFF VALVE

Carl B. Baumgarten, Houston, Tex., assignor to Gemco Manufacturing Corp., Buffalo, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,816
Int. Cl. F16k *31/22*; B67c *3/16*
U.S. Cl. 137—205 **22 Claims**



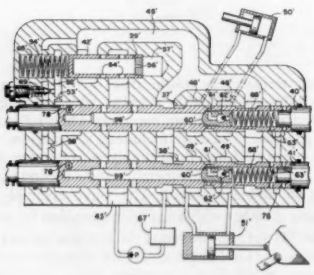
An automatic shut-off valve having an emergency by-pass for use with vacuum systems is disclosed. Vacuum systems are frequently used to suction off or handle liquids, yet the vacuum pump or some additional part of the system is not adapted to handle liquids. The present valve operates to automatically shut off the passage to the pump when a liquid floods the automatic shut-off valve which is located at some point in the vacuum system prior to the pump. When the automatic shut-off valve is flooded, a flotation needle-like valve is forced into the passage leading onto the pump, thus blocking it. The needle valve can be more securely seated by a series of barbs which are designed to prevent its downward movement. If the suction is more important than the system, for example during an operation, a by-pass is provided to circumvent the closed needle valve.

3,827,453

DIRECTIONAL CONTROL VALVE

Thomas J. Maiott, Mentor, and John C. Paul, Richmond Heights, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 5, 1972, Ser. No. 250,793
Int. Cl. F15b *11/02*
U.S. Cl. 137—117 **12 Claims**



A pressure compensated spool type directional control valve characterized in that it has a compensating piston which senses the pressure drop across a metering orifice whose flow area is determined by the position of the spool in the valve housing and which is operative to divert excess flow to the reservoir when the pressure drop across the metering orifice exceeds a predetermined value, said compensating piston being so operative in conjunction with the operation of any one of the spools of a plural spool directional control valve. The compensating piston may also be operated as an unloading valve to bypass pump output to the reservoir when the spool or spools of the directional control valve are in neutral position, or as a relief valve by employment of a pilot relief valve member in association with the side of the compensating piston which is exposed to pressure downstream of the metering orifice.

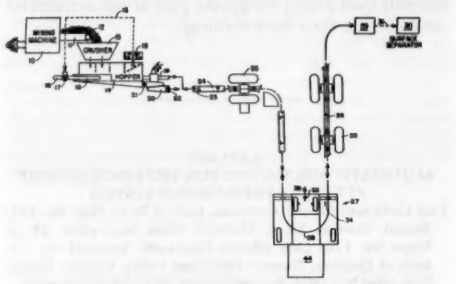
Another characterizing feature of the pressure compensated directional control valve herein is that each spool has a secondary compensating piston therein which decreases the pressure drop flow forces at the spool metering orifice. In a two-spool directional control valve the compensating piston adjusts to the lower load demand when both spools are simultaneously shifted to an operating position. In one form of two-spool directional control valve having a pressure compensating piston as aforesaid, check valves are provided to make adjustment to the higher load when both spools are simultaneously shifted to an operating position.

3,827,454

VEHICLE AND VEHICLE CONTROL SYSTEM

James H. Tarter, Royal Oak, Mich., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 26, 1972, Ser. No. 318,350
Int. Cl. B65g *53/54*
U.S. Cl. 137—344 **4 Claims**



A slurry hose transportation system has a plurality of powered carts supporting the slurry hose or hoses. Some of the carts are in storage, some are being conveyed out of storage, and some are in use. While the carts are in storage they are in an unpowered or "parked" state. While being conveyed, the carts are turned on as they pass to the use state and turned off as they pass to the storage state. Command signals to the carts can then only affect the carts in actual use.

3,827,455

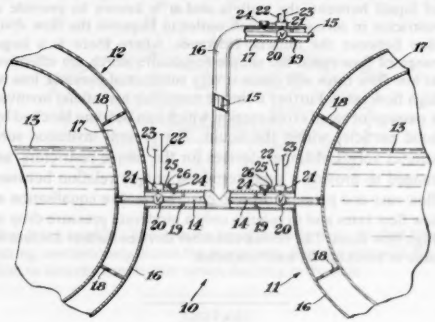
SELF-SEALING SYSTEM FOR STORING AND DISPENSING A FLUID MATERIAL

Walter Joe Lee, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 6, 1973, Ser. No. 394,950
Int. Cl. B65d *87/48*; F17c *13/00*
U.S. Cl. 137—375 **5 Claims**

The self-sealing system disclosed herein is particularly adapted for storing and dispensing a liquid composition, such as a liquid fuel. The fuel is stored in one or more containers which are connected by a conduit to a use point, such as an engine. The containers and conduit are enclosed by a jacket which is spaced from these components. The jacket space is divided into gas-tight sections, with each section being filled with a gas under pressure. Pressure-actuated valves are installed in the conduit at several positions between the containers and the use point. At least one valve is in direct communication with each gas tight section. In normal operation,

the valve is held in open position. If the jacket, the containers, or the conduit are ruptured at any point, an immediate pressure drop will occur in the affected section. The pressure drop will actuate the nearest valve and close the valve to stop the flow of fuel at that point.

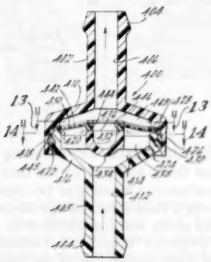


3,827,456

FLUID VALVES

William L. Sheppard, 36655 Romulus Rd., Romulus, Mich. 48174

Continuation-in-part of Ser. No. 65,773, Aug. 21, 1970, abandoned. This application May 18, 1972, Ser. No. 254,655
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **15 Claims**



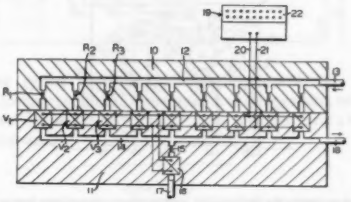
There is disclosed a family of check and/or pressure relief fluid valve utilizing a spring biased annular diaphragm element for valving. In a single-function form there is disclosed a simple check valve. In a dual-function form there is disclosed a check valve also having a pressure relief function permitting reverse flow above a predetermined pressure differential, this form being disclosed in an automotive fuel tank filler tube cap (i.e. a "gas cap"). There is also disclosed an improved filler tube cap construction and seal therefor. In a multifunction form there is disclosed a fluid valve capable of relieving a source of fluid under pressure to a primary outlet at a first very low pressure and additionally to a secondary outlet at a higher pressure. This valve also acts as a check valve by preventing the pressure of the fluid source from dropping below that at the secondary outlet. There is also disclosed an arrangement for using this multifunction valve in an evaporative emission control system for a motor vehicle having an internal combustion engine. All of the valves disclosed are particularly suited for gaseous fluids.

3,827,457

FLUID PRESSURE SYSTEM FOR CONVERTING DIGITAL SIGNALS TO ANALOG SIGNALS

Norman Vutz, Radnor, and Donald Brown, Monroeville, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerdinga, Pa.

Filed June 22, 1973, Ser. No. 372,849
Int. Cl. G05d *7/03*; F15c *3/00*
U.S. Cl. 137—599 **4 Claims**



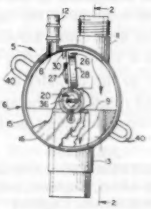
A fluid pressure system for converting a digital pressure signal into an analog pressure by control of fluid pressure passing through at least a pair of restrictors in series and by monitoring the pressure between the two restrictors each one of which may be characterized by a subsonic or sonic flow rate therethrough so as to produce any combination of such flow rates therebetween, depending upon the input pressure and the cross-sectional area and geometric configuration of said restrictors.

3,827,458

DIVERTER VALVE FOR LIQUIDS

Don C. Arnold, Palatine, Ill., assignor to Granda Corp., Alden, Ill.

Filed Nov. 22, 1972, Ser. No. 308,805
Int. Cl. F16k *1/16*
U.S. Cl. 137—610 **3 Claims**



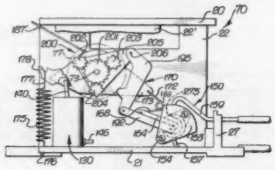
A diverter valve for liquids, usable for example in combination domestic tub and shower installations, having a hollow valve body with a supply port for pressurized liquid and a pair of spaced outlet ports communicating with ducts possessing upward and downward directionality. A valve stem for manual actuation is mounted rotatably on the valve body, the stem having a valving portion within the body adapted to be positioned to close the outlet port leading to the downward duct, thereby causing liquid flow through the outlet port leading to the upward duct. The valve stem is spring biased to a "rest" position such that the outlet port leading to the downward duct is open, permitting liquid to flow through such port and duct, and, due to hydraulic characteristics, precluding liquid flow through the other outlet port and associated upward duct. When the stem is rotated manually to close the outlet port communicating with the downward duct, the pressure in the liquid overcomes the spring bias and maintains the port closed until liquid flow through the supply port is stopped, at which time the valve reverts to "rest" condition.

3,827,459

WATER POWERED DRIVE FOR AUTOMATIC CONTROLLERS

Edwin J. Hunter, Riverside, Calif., assignor to The Toro Company, Riverside, Calif.

Filed Oct. 19, 1971, Ser. No. 190,528
Int. Cl. A01g 27/00
U.S. Cl. 137—624.14 **8 Claims**



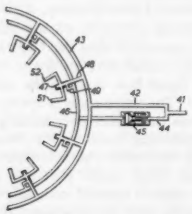
An automatic irrigation controller apparatus having a cam follower operated bank of pilot valves for operating selected pilot operated water valves throughout a watering or irrigation system is provided with a water powered means for receiving water under pressure from a source thereof and a member driven in a predetermined manner by the force of such water for driving a cam means to operate said cam followers via power transmission means between the water driven member and a cam shaft mounting said cam. A water piston is mounted in a cylinder with associated water valve means for selectively connecting the cylinder to a source of water under pressure and to a vent to provide a reciprocal movement for the piston, a return stroke for the piston being accomplished through the provision of a spring. A reciprocal piston movement is translated through a power transmission means including a drive ratchet wheel connected to the piston and a driven ratchet wheel connected to the cam shaft. An escapement mechanism is provided with a ring gear mounted about an engagement with a plurality of planetary gears mounted by a carrier about a sun gear driven by an input shaft of the apparatus connected to the cam shaft. Differences in the speed of rotation of the input shaft and the escapement means ring gear cause movement of the carrier which is connected to a valve restricting means for restricting the flow of water to the cylinder to regulate the speed of the water motor and rotation of the apparatus input shaft to that determined by the escapement mechanism.

3,827,460

FLUID DISTRIBUTION APPARATUS

Ronald Rimmer, Cheltenham, England, assignor to Dowty Fuel Systems Limited, Cheltenham, England

Filed Feb. 3, 1972, Ser. No. 223,258
Claims priority, application Great Britain, Feb. 8, 1971, 4158/71
Int. Cl. F15c 1/16
U.S. Cl. 137—809 **3 Claims**



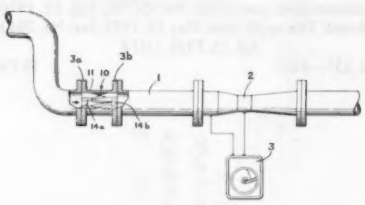
This invention relates to a fluid-distribution apparatus in which one main fluid inlet flow is divided substantially equally between a number of outlets for example as the feeding of a plurality of burners on a gas turbine engine from a single fuel supply. At low total flow rates the difference in height of the various outlets can adversely effect the equality of distribution of liquid between the outlets and it is known to provide a restrictor in series with each outlet to improve the flow division between the outlets. However, where there is a large range of flow rates, the simple restrictors which are effective at low flow rates will cause a very substantial pressure loss at high flow rates. Further a simple restrictor essentially involves a passage of small cross-section which can become blocked by solid particles within the liquid. The present invention substitutes vortex chamber devices for the simple restrictors, arranged to provide a predetermined unique relation between flow rate and pressure drop to ensure effective equalisation at low flow rates and to require only a moderate pressure drop at high flow rates. The vortex chamber devices further are less liable to blockage by solid particles.

3,827,461

STREAM FILAMENT MIXER FOR PIPE FLOW

Frederick C. Gilman, Pompton Lakes, N.J., assignor to Worthington Pump International, Inc., Mountainside, N.J.

Filed Nov. 21, 1972, Ser. No. 308,399
Int. Cl. F15d 1/04
U.S. Cl. 138—39 **9 Claims**



A stream filament mixer for reducing stratification of velocity-stratified flows and net vortex flows within a piping system, which includes: a housing to be connected in the piping system forming a fluid flow passage having an inlet and an outlet; associated guide surfaces formed by a plurality of circumferentially disposed oppositely twisted adjacent strips connected in the longitudinal line of the housing, for generating a plurality of oppositely rotating vortexes of equal strength in the fluid passing through the fluid flow passage formed by the housing so that the fluid will be delivered in a substantially homogeneous, unstratified flow from the outlet of the housing into the associate piping of the piping system in which the stream filament mixer is connected without generating substantial differential pressure across the point where the stream filament is connected in the piping system.

3,827,462

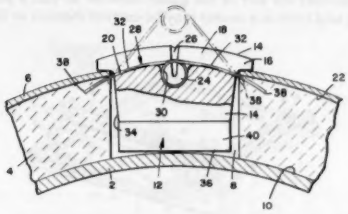
INSULATING PLUG

Jerry J. Celesta, Rodeo, Calif.

Filed Aug. 7, 1972, Ser. No. 278,512
Int. Cl. F16l 55/10
U.S. Cl. 138—90 **21 Claims**

A plug for closing and insulating holes through thermal insulation around pipe, vessels and the like. A plug extends into the hole and has a cap covering the hole and limiting the maximum extent to which the plug can enter the hole. A groove extends across the cap and holds an elongate spring having op-

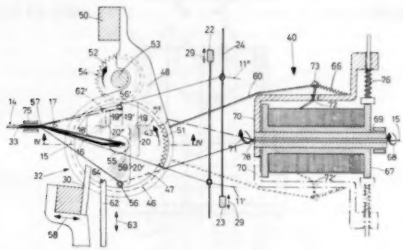
positely oriented arms that protrude past the groove, into the insulation around the pipe and beneath an outermost insulation layer or skin. The groove is sufficiently deep so that the spring continuously biases the cover into engagement with the skin to thereby removably retain the plug in the hole.



3,827,463
METHOD OF AND APPARATUS FOR THE PRODUCTION OF A SLIDE FASTENER

Friedrich Glindmeyer; Karl Limpens, both of Stolberg, and Wilhelm Hennenberg, Alsdorf, all of Germany, assignors to Firma William Prym-Werke K.G., Stolberg/Rhineland, Germany

Filed Mar. 27, 1972, Ser. No. 238,192
Claims priority, application Germany, Mar. 25, 1971, 2114561; Apr. 10, 1971, 2117598; May 22, 1971, 2125470
Int. Cl. D03d *41/00*
U.S. Cl. 139—35 **7 Claims**



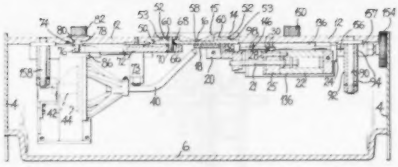
A method and of producing a slide fastener tape and an apparatus therefor for guiding back and forth a fastener member-forming warp in a shed forming movement through a weaving plane to form a row of fastener members, feeding the profile strand within a range of a stop point about a loop-forming mandrel, the latter held at one end and binding the profile strand by a weft thread and the shed forming movement caused by feeding the latter about the mandrel.

3,827,464
MANUFACTURE OF SPRINGS

Ternece James Leonard Clarke; Robert Charles Quarmby, both of Groby, and George Arthur Matts, Oadby, all of England, assignors to The British United Shoe Machinery Co. Ltd., Leicester, England

Filed Jan. 15, 1973, Ser. No. 323,891
Claims priority, application Great Britain, Jan. 21, 1972, 2914/72
Int. Cl. B21f *35/02*
U.S. Cl. 140—103 **1 Claim**

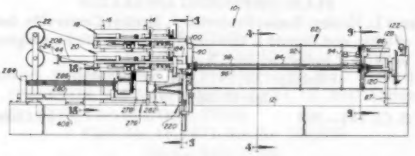
The invention relates to machines for use in forming attaching loops in generally longitudinal orientation at or from end portions of coil springs. An end portion of a spring is located axially of a machine axis and transversely of a machine axis by locating means of the machine. The machine also comprises orientating means for facilitating orientation of the spring about the machine axis so that the end of the wire of which the spring is formed is correctly positioned. The machine further comprises looping means for operating on the located and orientated end portion of the spring to form a loop of a desired configuration and orientation.



3,827,465
APPARATUS FOR FORMING TWISTED PAIRS OF CONDUCTOR WIRE

Fred W. Loy, Whitehall; William J. Harms, Nunica; Charles W. Wojahn, Holland, and Frederick Karasinski, Grand Rapids, all of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Mar. 20, 1972, Ser. No. 236,413
Int. Cl. B21f *7/00*
U.S. Cl. 140—149 **20 Claims**



Apparatus for forming twisted pairs of electrical conductor wire cut to predetermined lengths and having one wire end of a pair longitudinally offset from the adjacent end of the other wire of the pair. The apparatus includes plural wire preparation units which operate to cut predetermined lengths of wire and strip insulation from one or both ends of each wire. The wire preparation units are operable to feed prepared wires to a rotary wire carrier which includes a plurality of pairs of side by side elongated wire receiving tubes. The wire carrier is rotatably indexable from a wire receiving position to a position where a wire offsetting device comprising a fluid operated clamp and linear actuator operates to longitudinally offset one wire of a pair of wires prior to a twisting operation. The wire carrier is further indexable to a position wherein a pair of wires becomes engaged with a wire tensioning device and the adjacent ends of a pair of wires are gripped by a twisting and pulling apparatus. The twisting and pulling apparatus includes a linearly movable carriage having a pair of rotatable gripping jaws which grip adjacent ends of a pair of wires and withdraw the wires from the wire carrier tubes through the tensioning device while rotating. The combined linear and rotary movement of the gripping jaws is controlled to impart a predetermined number of twists to a wire pair.

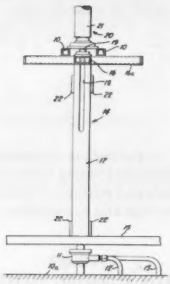
3,827,466
WASHING AND FILLING MACHINES

Anthony John Wiggin, Bilston, England, assignor to GKN Sankey Limited, Bilston, Staffordshire, England

Filed Mar. 23, 1972, Ser. No. 237,411
Int. Cl. B67c *3/32*; B08b *3/02*
U.S. Cl. 141—92 **9 Claims**

A machine for washing and/or filling containers comprises at least one treatment station, the station having a fixed wash-

ing ro filling head at the bottom of the station and a support cradle for an inverted container, the cradle having a lower support surface to support an inverted container above the head and an upper bearing surface, the two surfaces being



spaced apart by a sufficient distance for a container to be placed in the cradle, the cradle being moveable downwardly to lower the container onto the head and to clamp the container between the head and the upper bearing surface ready for treatment by the head.

3,827,467

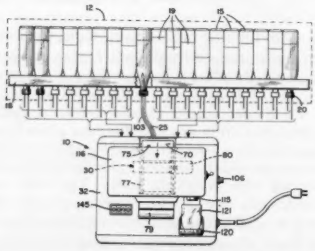
FLUID DISPENSING APPARATUS

Terry L. Henley, Xenia; Frederick A. Henley, Centerville, both of Ohio, and Donald I. Townsend, Midland, Mich., assignors to HH & T Industries, Inc., Xenia, Ohio

Filed Apr. 30, 1973, Ser. No. 355,516

Int. Cl. B65b *3/30*

U.S. Cl. 141—104 **19 Claims**



A fluid dispensing apparatus simultaneously dispenses precise quantities of various fluids according to a predetermined schedule encoded onto a control card. The card has projections or bumps thereon which engage trigger arms as the card is moved at a constant speed through a channel past the trigger arms. The trigger arms control a plurality of valves by unlocking over-center locking arms which release previously pinched-off sections of resilient tubing to release the various fluids controlled thereby. Completed travel of the card causes reset of all the valves and terminates dispensing of the fluids.

3,827,468

ROUTING GUIDE

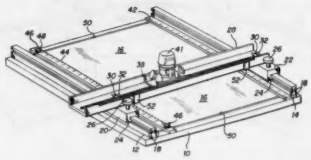
Orvil A. Markham, 9060 Jared, Dallas, Tex. 75217

Filed May 23, 1973, Ser. No. 363,001

Int. Cl. B27c *5/04*; **B43l** *7/00*

U.S. Cl. 144—136 R **6 Claims**

A routing guide having a base with tracks on either side thereof for receiving a workpiece therebetween; a slotted guide member extends between the tracks over the base, and has carriage means slidably engaging each track for movement of the guide member along the tracks; a mounting plate is received over the slot of the guide member so that a portable cutting tool such as a router may be carried thereon so that the



bit of the tool extends through the hole in the mounting plate and the slot on the guide member to be traversable across the workpiece placed on the base; the guide member is pivotally mounted on each of its ends so that it may be rotated with respect to the tracks for making angular cuts.

3,827,469

PENCIL SHARPENER

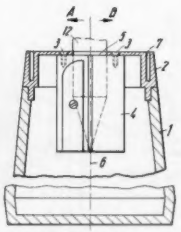
Werner Mobius, Erlangen, Germany, assignor to Firma T. Paul Mobius, Erlangen, Germany

Filed May 16, 1973, Ser. No. 360,794

Claims priority, application Germany, May 20, 1972, 2224888

Int. Cl. B43l *23/08*

U.S. Cl. 145—3.3 **13 Claims**



A pencil sharpener is formed of a housing with an opening in its surface and a cover extending across and closing the opening. A sharpening member is secured to the cover and extends inwardly into the housing so that a pencil to be sharpened has its longitudinal axis extending transversely of the cover. The cover is elastically deformable in the direction transverse to the direction of insertion of a pencil into the sharpening member so that any force exerted on a pencil in such transverse direction will be absorbed by the cover and will not result in damage to the pencil. The elastic deformation can be provided by the use of an elastically deformable material for the cover and, further, by shaping the cover, such as with grooves, so that it deforms elastically in the desired direction.

3,827,470

RATCHET SCREW DRIVER

Harley W. Douglas, 142 Whiting St., and Kenneth Graydon, 4 Cross St., both of Ingersoll, Ontario, Canada

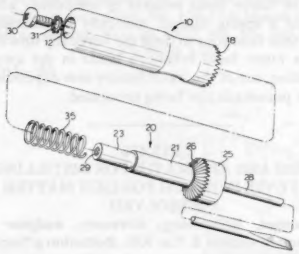
Filed Mar. 1, 1973, Ser. No. 336,937

Int. Cl. B25b *15/04*

U.S. Cl. 145—76 **6 Claims**

A ratchet screw driver is shown. The screw driver is comprised of a blade carrying shank which is intimately slidable within a sleeve housing provided in the handle. Complementa-

ry ratchet teeth are formed on a sloping mating surface of the handle and the shank. The ratchet teeth are normally maintained in a spaced disengaged position from each other by a



biassing means in the handle. The ratchet teeth engage with each other when the blade is pressed downwards into the slot of the screw to be operated.

3,827,471

FLEXIBLE TRANSPORTING CONTAINERS

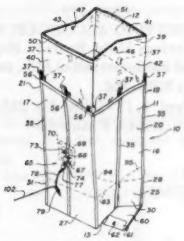
Gerald H. Gregory, Surrey, British Columbia, and Donald W. Benedict, Beach Grove, British Columbia, both of Canada, assignors to False Creek Industries Ltd., Vancouver, British Columbia, Canada

Filed Sept. 18, 1972, Ser. No. 290,108

Claims priority, application Great Britain, Oct. 18, 1971, 48450/71

Int. Cl. A01g *19/06*

U.S. Cl. 150—2 **8 Claims**



A container in the form of a tube-like bag open at the top and bottom and having a bottom section that can be folded over the lower end of the bag and up the side of the latter. Securing means releasably connects the folded-over bottom section to the side of the bag. The container can be rolled or folded up for storage and shipment, and it can be opened into tubular form and filled with particulate material through the upper end thereof. Release of the securing means when the bag is lifted up or suspended allows the bottom section to straighten out and the material to discharge from the container.

3,827,472

RECLOSABLE BAG

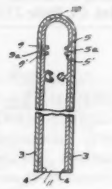
Tatsuro Uramoto, Tokyo, Japan, assignor to Kabushiki Kaisha Seisan Nipponsha, Tokyo, Japan

Continuation-in-part of Ser. No. 882,491, Dec. 5, 1969, abandoned. This application Feb. 16, 1972, Ser. No. 226,680

Int. Cl. B65d *31/02*

U.S. Cl. 150—3 **11 Claims**

A flexible bag structure having an outer layer and an inner layer with the layers bonded to each other and being coextensive to the top of the bag, and the inner layer formed of a plastic with interlocking rib and groove profiles integral with the plastic to close the top of the bag and tear strip means in-



tegral with the inner layer and opposite the coextensive outer layer for tearing the top off of the bag with the tear strip means preferably in the form of a pair of ribs.

ERRATUM

For Class 152—319 see:
Patent No. 3,827,792

3,827,473

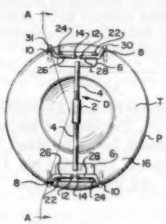
TIRE TRACTION DEVICE

Robert Blickensderfer, 8191 Butterworth Rd., Maineville, Ohio 45039, and Robert Blickensderfer, III, 3312 Elmwood Dr., N.W., Corvallis, Oreg. 97330

Filed Dec. 16, 1971, Ser. No. 208,570

Int. Cl. B60c *27/02*

U.S. Cl. 152—218 **15 Claims**



A traction device for a tire or the like which includes a plurality of traction members; means for adjustably connecting of the traction members in spaced relation to each other; each of the traction members including a yoke and a U-shaped traction element for encircling the tread of a tire in a transverse direction; the U-shaped traction element having the free end of one leg of the U pivotally secured to the yoke; stop means on the yoke for preventing rotation of the traction element in a direction which, when positioned on the tire, would displace the traction element outwardly from the tire tread; and means on the yoke permitting rotational inward displacement of the traction element.

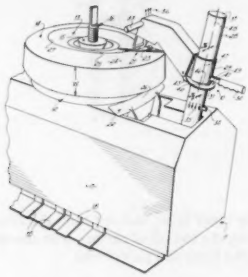
This invention relates to tire traction devices and, more particularly, to an improved emergency device which may be rapidly and easily mounted on and demounted from a vehicle tire to provide increased traction.

3,827,474

POWER COLUMN LATCH

David W. Besuden, Cincinnati, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio

Filed Jan. 30, 1973, Ser. No. 328,015
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.28 **6 Claims**



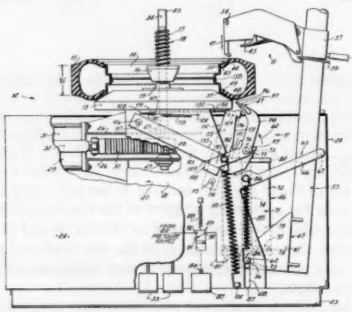
An improved power column latch for an upper bead breaker mechanism that is adapted to restrain the upper bead breaker in desired location on the power column when the power column is drawn down to break a tire's bead away from a wheel's rim on a tire changer machine. The upper bead breaker mechanism includes a collar, the collar being telescoped over and slidable relative to the substantially vertically oriented power column. The improved latch is characterized by a doughnut-shaped element that surrounds the power column, the element having an inside diameter slightly greater than the outside diameter of the power column. The doughnut-shaped element is pivotally mounted on its outer periphery, to the upper bead breaker mechanism beneath the collar. This allows the doughnut-shaped element to fall by gravity into latching engagement with the power column, thereby precluding upward movement of the upper bead breaker on the power column as the power column is drawn downwardly when breaking a bead. This also allows the doughnut-shaped element to be easily lifted out of latching engagement with the power column by an operator, thereby permitting the upper bead breaker to be manually positioned on the power column as desired by the operator and as dependent on the width of the tire being changed.

3,827,475

LOWER BEAD BREAKER MECHANISM

William G. Brosene, Jr., Cincinnati, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio

Filed Jan. 30, 1973, Ser. No. 328,011
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.28 **2 Claims**



A lower bead breaker is mounted for limited vertically upward movement in an arcuate path by virtue of a control arm that is pivotally fixed to the machine's main frame at one end and that is pivotally connected to a fluid motor at the other end, the lower bead breaker's blade being spring loaded against a stop block fixed to the main frame so as to lift the blade off the machine's table and locate same in the home position. The lower bead breaker is selectively adapted to track against a spring loaded, manually positionable travel limiter arm that functions to limit the vertically upward movement of the lower bead breaker's blade in the away or extended position, use of the travel limiter arm depending on the width of the pneumatic tire being processed.

3,827,476

METHOD AND APPARATUS FOR DISTILLING OF SOLVENTS IN WHICH FOREIGN MATTER IS DISSOLVED

Erwin Biesinger, Rottenburg, Germany, assignor to Seco Maschinenbau GmbH & Co. KG, Rottenburg/Neckar, Germany

Filed Dec. 21, 1972, Ser. No. 317,358
Claims priority, application Germany, Dec. 23, 1971, 2164373
Int. Cl. B01d *1/26, 1/00*
U.S. Cl. 159—44 **4 Claims**

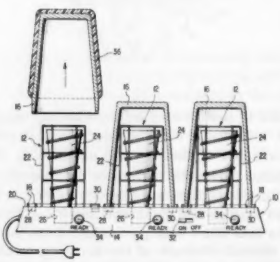
A method and apparatus for distilling solvents in which foreign matter is dissolved, resulting for instance from treating of textile material. The solvent is fed in a first distilling vessel in which it is evaporated until the liquid solvents therein reaches a predetermined level, whereafter the remaining liquid solvent is discharged from the first into a second distilling vessel wherein the solvent is subjected to a subsequent distilling operation so that a cake, from foreign matter dissolved in this solvent, will form only in the second distilling vessel from which it can be discharged without interrupting the distilling process in the first distilling vessel.

3,827,477

METHOD OF HEATING ALCOHOLIC BEVERAGES

Robert I. Weiner, Owings Mills; Henri H. Hoge, and Benicio I. Dussan V., both of Baltimore, all of Md., assignors to Robert I. Weiner, Owings Mills, Md.

Filed Sept. 1, 1972, Ser. No. 285,591
Int. Cl. F24h *3/00*
U.S. Cl. 165—1 **5 Claims**



A thick walled aluminum cocktail shaker is preheated to a predetermined temperature in excess of a desired hot service temperature for an alcoholic beverage, such as buttered rum mix. The shaker is removed from the preheat source prior to introduction of the beverage which is then shaken until thermal equilibrium is achieved.

The apparatus involves a preheat console upon which one or more of the cocktail shakers are, each, adapted to be supported in an inverted position in surrounding relation to an upstanding, substantially similarly shaped preheating element which, for a given power input, assures substantially uniform preheating of the entire shaker to a desired temperature within the shortest possible time.

3,827,478

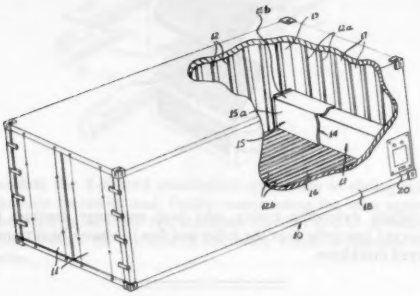
SHIPPING CONTAINER WITH REMOVABLE ENVIRONMENTAL CONTROL UNIT

Maurice Beaudet, St. Philippe de La Prairie, Quebec, Canada, assignor to Galt Equipment Ltd., Quebec, Canada

Continuation-in-part of Ser. No. 126,114, March 19, 1971. This application Nov. 28, 1972, Ser. No. 309,969

Int. Cl. B60h *3/00*

U.S. Cl. 165—42 **3 Claims**



The combination of a shipping container and a portable environmental control cartridge unit is disclosed. The container has external walls and access doors to a storage space which includes a compartment therein having an access opening in the external walls different from the access doors to the storage space. The compartment is in air or gas communication with the storage space but has no access for the removal or placement of goods between the compartment and the storage space. The portable environmental control cartridge unit is removably positioned in the compartment being insertable and removable from the compartment through the access opening.

3,827,479

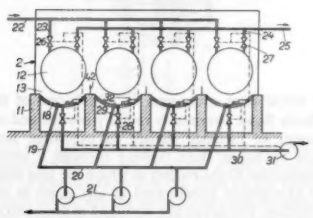
SURFACE CONDENSOR

Peter Fejes, Vasteras, Sweden, assignor to Asea Atom AB, Vasteras, Sweden

Filed Apr. 12, 1971, Ser. No. 133,095

Int. Cl. F28f *27/02*

U.S. Cl. 165—101 **4 Claims**



A surface condensor for steam generated by nuclear power includes a plurality of cooling tubes arranged in a common casing having inlet openings for steam and an outlet opening above a plurality of basins for collecting condensate. Each basin is provided with a closeable return conduit for pure condensate containing a valve which is normally open. There is also a line through which polluted liquid can be drawn off from any basin provided with a normally closed valve. An arrangement for measuring the pollution in each basin opens the valve for polluted liquid in response to a leakage of coolant from the tubes and at the same time shuts off the flow to the leaking tube bundle.

The casing also supports a housing enclosing a plurality of turbines which are fed by the steam and which discharge to the condensor.

3,827,480

ELECTRICALLY INSULATED DOUBLE TUBE HEAT PIPE ARRANGEMENT

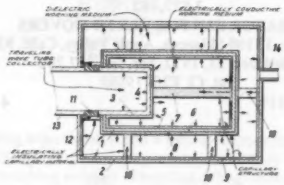
Gregor Gammel, Dossenheim; Peter H. Pawlowski, Heidelberg; Uwe Heidtmann, Nussloch, and Mattias Jons, Heidelberg, all of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Germany

Filed Apr. 20, 1972, Ser. No. 245,827

Claims priority, application Germany, Apr. 27, 1971, 2120477

Int. Cl. F28d *15/00*

U.S. Cl. 165—105 **8 Claims**



For cooling a heat source, such as a component part of electronic equipment which has a high electrical potential, a heat pipe arrangement is employed which is formed of a closed first pipe or tube in contact with the heat source and a closed second pipe or tube enclosing the first tube. A capillary structure of a metallic material is formed on the inner surface of the first tube and a similar capillary structure also of a metallic material is formed on the outer surface of the first tube and acts as a part of the capillary structure within the second tube. On the inner surface of the second tube, spaced outwardly from the capillary structure on the outer surface of the inner tube, is another capillary structure connected by a bridging member formed of an electrical insulating material, to the capillary structure on the outer surface of the inner tube to permit condensation to flow from the capillary structure on the outer tube to that on the inner tube. Similarly, a bridging member is provided within the inner tube for the same purpose, the vaporizable working medium within the inner tube is either water or a metal while the working medium within the outer tube is a vaporizable dielectric liquid.

3,827,481

DISTRIBUTOR FOR GEL-LIKE MATERIALS

Zoltan P. Mandy, Camillus; George Akerhielm, Manlius, and David Tulowiecki, Liverpool, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

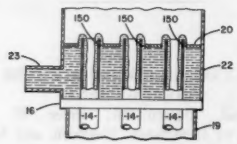
Filed May 1, 1973, Ser. No. 356,258

Int. Cl. F28f *25/00*

U.S. Cl. 165—118 **3 Claims**

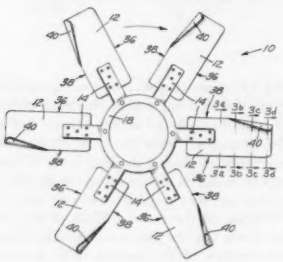
Apparatus for distributing a gel-like material such as sludge to the entrances of a plurality of vertically extending conduits such as falling film heat exchange tubes used in a freeze-thaw sludge treatment system. The apparatus comprises a plate hav-

ing a set of orifices for receiving the upper ends of the conduits, there being slight clearance between the orifice edge and the conduit. The gel-like material is introduced beneath



the distributor plate under pressure, and the material flows upwardly through the clearance and into the upper ends of the conduits in a uniform manner.

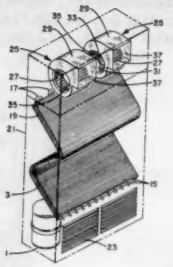
3,827,482
RADIATOR FAN FOR EARTH MOVERS
Robert R. Pope, 13100 Skiomah, Apple Valley, Calif. 92307
Filed Dec. 21, 1972, Ser. No. 317,202
Int. Cl. F28f *19/00*
U.S. Cl. 165—119 **4 Claims**



A radiator fan for earth moving equipment, in which air is blown through the radiator, said fan being designed to remove most of the rock and dirt from the air before the air is blown through the radiator, so as to prevent damage to the radiator core. The trailing edges of the fan blades are curled around on the side facing the radiator, so that stones or dirt are caught by the curled portion and accelerated in a circular path around the axis of the fan, causing the debris to be thrown radially outward by centrifugal force. The centrifugally thrown sand and dust particles are caught by a shroud surrounding the fan, and are then picked up and carried forwardly through the radiator core at relatively low velocity by the turbulent air outside the main blast of the fan.

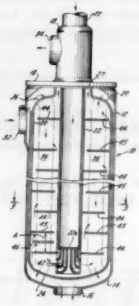
3,827,483
HEAT EXCHANGER
Harold H. Hopkinson, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 16, 1973, Ser. No. 360,703
Int. Cl. F25b *39/04*
U.S. Cl. 165—145 **3 Claims**

A heat exchanger for a refrigeration circuit comprising a plurality of parallel tubes bent in an accordion shape, and a plurality of parallel heat exchange fins running transverse to the tubes. The heat exchanger is advantageously mounted in a



vertically extending casing, and heat exchange medium is directed upwardly over the tubes and fins to absorb heat transferred therefrom.

3,827,484
LIQUID METAL HEAT EXCHANGER
Walter Wolowodiuk, 51 Evergreen Ave., New Providence, N.J. 07974
Continuation-in-part of Ser. No. 8,501, Feb. 4, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 321,507
Int. Cl. F28f *9/22*
U.S. Cl. 165—161 **4 Claims**

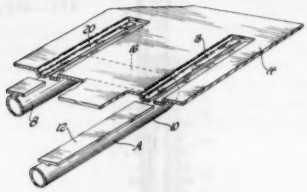


A liquid metal heat exchanger in which one of the heat exchange fluids flows alternately radially inward and outward across a series of circular baffles to exchange heat with another heat exchange fluid flowing through a plurality of tubes perpendicular to the baffles in which the first mentioned fluid is not excessively accelerated at any point in its travel across the baffles. The tubes are arranged in concentric circular rows with the spacing between tubes in each row being smaller at larger circles than at comparatively smaller circles.

3,827,485
HEAT EXCHANGER AND METHOD OF MANUFACTURE THEREFOR
Stephen L. Hickman, and Carl O. Griewahn, both of Adrian, Mich., assignors to Brazeway, Inc., Adrian, Mich.
Filed Mar. 23, 1973, Ser. No. 344,245
Int. Cl. F28f *1/32*
U.S. Cl. 165—171 **9 Claims**

A heat exchange apparatus comprising a tube and plate and a method of manufacture for the heat exchange apparatus.

The method includes the steps of forming the tube, such as by extrusion, to provide an external attachment appendage which, in the illustrative embodiment, is T-shaped in cross section, forming spaced parallel slots in a thin plate, offsetting the material of the plate along and adjacent the slots to accommodate the T-shaped attachment appendage in sliding relationship therewith and, finally, compressing the tube against the plate to lock the two elements together and to provide a flush surface on the side of the plate which is opposite the tube.

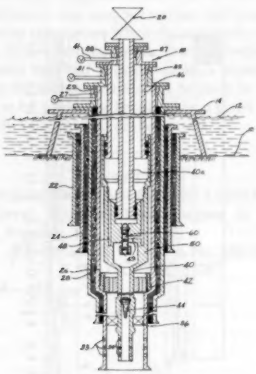


3,827,486

WELL REENTRY SYSTEM

Harold Hall, Virginia Water, England, assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Mar. 17, 1972, Ser. No. 235,611
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 **16 Claims**



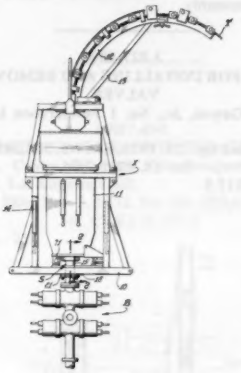
Method and apparatus for completing a well having a wellhead supported on a platform above a body of water and the well bore of which penetrates the floor of the body of water. The method comprises the steps of: running at least one casing string into the well bore; cementing the casing string in the well bore; running a first portion of a tubing string into the casing string; suspending the first portion of the tubing string in the casing string at a point below the floor; lowering a second portion of the tubing string through the body of water into sliding and sealing telescopic engagement with the upper end of the first portion of the tubing string; and suspending the second portion of the tubing string at the wellhead. The apparatus may comprise a safety vavle assembly installed in the first portion of the tubing string at a point below the water body floor. The valve assembly may be hydraulically operated by fluid conducted to the valve assembly through a conduit supported at the wellhead and extending through the body of water for fluid-tight communication with the valve assembly.

3,827,487

TUBING INJECTOR AND STUFFING BOX CONSTRUCTION

John L. Jackson, Lafayette, and John E. Steinwinder, Broussard, both of La., assignors to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Apr. 30, 1973, Ser. No. 355,753
Int. Cl. E21b *33/03*
U.S. Cl. 166—77 **6 Claims**



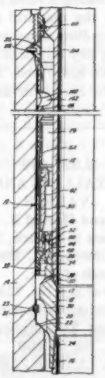
A tubing injector base and a tubing stripper are mounted on the top flange of a blowout preventer assembly at the top of a well. The tubing stripper comprises a longitudinally split housing and a removable stripper rubber.

3,827,488

CASING HANGER ASSEMBLY AND OPERATING TOOLS THEREFOR

Andre L. Piazza, and Raymond K. Lamb, both of Houston, Tex., assignors to The Rucker Company, Houston, Tex.

Filed May 7, 1973, Ser. No. 357,832
Int. Cl. E21b *33/10*
U.S. Cl. 166—87 **20 Claims**



A casing hanger assembly adapted to be set in a wellhead by longitudinal actuation, and operating tools for running, setting and retrieval thereof. A circulating casing hanger having a body including a fluid passageway carrying a seal sleeve having a seal for sealing in the passageway. A longitudinally movable actuator for moving a locking ring and the sleeve

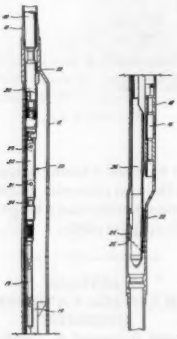
downwardly to set the seal and engage the ring in a locking recess in the body. Coacting tapering faces directed inwardly and downwardly between the locking ring and the recess and coacting tapering faces directed downwardly and outwardly between the actuator and locking ring providing a releasable holding structure as well as providing a mechanical advantage for setting the seal. Various locking means and energy storing means may be used to maintain the seal in a set position. Hanger and protector bowl setting and retrieving tools for operating the assembly.

3,827,489

APPARATUS FOR INSTALLING AND REMOVING FLOW VALVES

Harold E. McGowen, Jr., No. 1 Powderhorn Ln., Houston, Tex. 77024

Filed Apr. 25, 1973, Ser. No. 354,361
Int. Cl. E21b *7/06*
U.S. Cl. 166—117.5 **5 Claims**



A tubing mandrel for use in a well tubing having an open bore for alignment with the well tubing and valve pocket offset from the open bore with an actuating shoulder in the mandrel above the pocket for actuating a valve handling apparatus and an orientation sleeve in the mandrel adjacent or below the valve pocket. A valve handling apparatus for use in the mandrel having an actuating key adjacent the upper end and an orienting key adjacent the lower end. The actuating shoulder being positioned out of the open bore and above the pocket.

3,827,490

APPARATUS FOR INSTALLING AND REMOVING FLOW VALVES

Howard H. Moore, Jr., and Harold E. McGowen, Jr., both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.; Harold E. McGowen, Jr., Houston and Howard H. Moore, Jr., Weimar, both of, Tex.

Continuation-in-part of Ser. No. 725,637, May 1, 1968, abandoned, and a continuation-in-part of Ser. No. 864,260, Sept. 18, 1969, abandoned. This application Dec. 4, 1970, Ser. No. 95,408
Int. Cl. E21b *23/00*
U.S. Cl. 166—117.5 **14 Claims**

An apparatus for installing and removing flow valves in a well tubing having a plurality of valve receiving side pockets offset from the main bore by providing an orientation sleeve for directing a guide key of a valve handling apparatus in the sleeve, and a shoulder in the sleeve for actuation of the valve handling apparatus. A valve handling apparatus including a support body supporting a longitudinally movable body which includes a guide key pivotally connected at its lower end and yieldably urged outwardly by spring means so that the guide

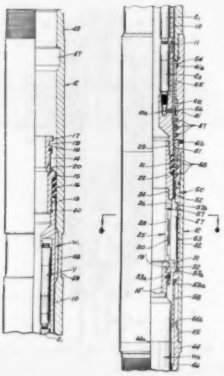
key will readily pass downwardly through any number of orientation sleeves and can selectively install or remove a valve in or from any desired vertically positioned mandrel.

3,827,491

APPARATUS FOR SELECTIVELY RECEIVING AND RELEASING WELL TOOLS

Robert W. Dinning, Houston, Tex., assignor to Macco Oil Tool Company, Inc., Houston, Tex.

Filed Mar. 26, 1973, Ser. No. 344,568
Int. Cl. E21b *33/16, 33/00*
U.S. Cl. 166—154 **22 Claims**



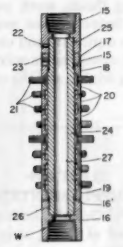
Apparatus for selectively receiving a well tool within a well conduit comprising: a tubular housing adapted for connection in a well conduit; a tubular sleeve disposed within the housing for limited movement between an upper closed position and lower open position; cooperable ports in the sleeve and housing, registerable when the sleeve is in the lower position, to provide fluid communication between the interior and exterior of the conduit; and a latch recess engageable by latches on the well tool for receiving the well tool and moving the sleeve from its closed position to its open position as the well tool is moved downwardly through the conduit. Seals may be provided between the well tool and the sleeve and housing respectively, isolating the upper end of the sleeve from the pressure within the conduit, the lower end of the sleeve being subjected to the pressure within the conduit. The upper end of the sleeve may be in fluid communication with the exterior of the conduit through the ports when the sleeve is in its open position.

3,827,492

OIL WELL BRUSH TOOL

Donald P. Hammon, Long Beach, Calif., and Edwin J. Hammon, Albuquerque, N. Mex., assignors to Industrial Concepts Corporation, Albuquerque, N. Mex.

Filed Feb. 20, 1973, Ser. No. 333,776
Int. Cl. E21b *37/02*
U.S. Cl. 166—173 4 Claims



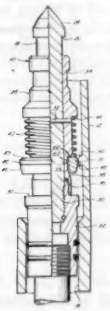
A mandrel designed for insertion in an oil pipe string includes a plurality of ring members surrounding the mandrel in a stacked array the upper and lower ends of the mandrel threadedly receiving end members for squeezing the ring members together in a longitudinal direction. A plurality of brush elements extend radially from between adjacent circumferential edges of the ring members, the squeezing force on the ring members holding the brushes in their set position. The sets of brushes from between two adjacent ring members are circumferentially staggered relative to the sets of brushes from the next adjacent ring member so that 360° engagement of the oil well casing takes place when the mandrel is moved through the casing. Either brushes in the form of bunches of stiff wires may be used or rigid block members constituting cutting blades may be substituted for the brushes to thereby enable the casing to be gauged or broached to a given diameter determined by the radial extent of the cutters.

3,827,493

LATCH FOR RETRIEVABLE FLOW CONTROL DEVICES

Ben D. Terral, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed May 16, 1973, Ser. No. 360,659
Int. Cl. E21b *23/00*
U.S. Cl. 166—215 1 Claim



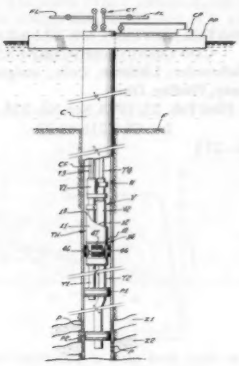
An improved latch for locking flow control devices in a mandrel receiver in which a spring-loaded concentric ring moves laterally into a semi-circular recess positioned above the receiver by providing means whose outside diameter is larger than the inside diameter of the latch ring and located on the latch body in a location that will mechanically force the latch ring through the latching shoulder and into the latching recess insuring that the latch ring will not be caught within the latching shoulder. A shoulder on the latch positioned to carry the locking ring past the locking shoulder when the flow control device is seated in the receiver.

3,827,494

ANTI-FRICTION BALL VALVE OPERATING MEANS

Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Nov. 3, 1972, Ser. No. 303,623
Int. Cl. E21b *43/12*
U.S. Cl. 166—224 30 Claims



A ball valve is supported in a subsurface shutoff valve for wells in a ball guide which transmits the closing force for rotating the ball through fingers which engage the ball adjacent to its axis of rotation on a small radius so that there is a low frictional moment arm. The ball valve is opened by control fluid pressure and closed by a spring and well fluid pressure, and the spring acts to overcome the hydrostatic pressure of the control fluid.

3,827,495

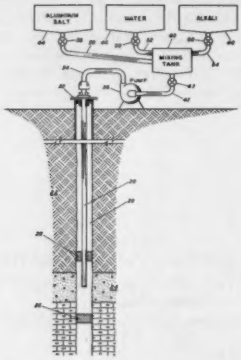
SAND STABILIZATION IN SELECTED FORMATIONS

Marion G. Reed, Hacienda Heights, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 177,263, Sept. 2, 1971, abandoned, Continuation-in-part of Ser. No. 875,026, Nov. 10, 1969, Pat. No. 3,603,399. This application Nov. 27, 1972, Ser. No. 309,875The portion of the term of this patent subsequent to Sept. 7, 1988, has been disclaimed.
Int. Cl. E21b *33/138, 43/27*
U.S. Cl. 166—250 44 Claims

The disclosure provides a method of sand stabilization in

certain selected clay-containing formations by treating the formation with a hydroxy-aluminum solution having a ratio of



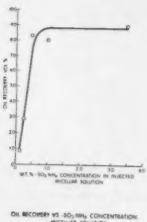
the hydroxyl groups to the aluminum atoms in the range of from 1.5 to 2.7.

3,827,496

HIGH WATER CONTENT MICELLAR SOLUTION CONTAINING THICKENERS

Donald E. Schroeder, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Feb. 23, 1973, Ser. No. 335,187
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **10 Claims**



OIL RECOVERY VS. SO_3NH_4 CONCENTRATION MICELLAR SOLUTION

Improved oil recoveries with water-external micellar solutions are obtained by flooding with a micellar solution containing water, a viscosity-increasing agent dissolved in the water, hydrocarbon, and monovalent cation-containing petroleum sulfonate(s) having an average equivalent weight within the range of about 300–525 and being present in concentrations at least five times the CMC (critical micelle concentration) within the particular micellar solution. Optionally cosurfactant and/or electrolyte can be present. The micellar solution can be followed by an aqueous mobility buffer and the buffer followed by a waterdrive. The micellar solution is displaced toward a production well to recover crude oil therethrough.

3,827,497

OIL RECOVERY PROCESS USING AQUEOUS SURFACTANT COMPOSITIONS

Dale W. Dycus; Earl W. Malmberg, and Harry L. Wilchester, all of Dallas, Tex., assignors to Sun Oil Company, Dallas, Tex.

Filed Feb. 1, 1973, Ser. No. 328,813
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **11 Claims**

A surfactant composition useful in recovering oil by waterflooding with brine comprises a mixture of an organic sulfonate surfactant, a sulfated or sulfonated oxyalkylated alcohol and a polyalkylene glycol alkyl ether.

3,827,498

FLUID LOSS ADDITIVE

Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 177,680, Sept. 3, 1971, abandoned. This application May 1, 1972, Ser. No. 249,085
Int. Cl. E21b *43/22, 43/26*
U.S. Cl. 166—282 **10 Claims**

An additive for aqueous fluids including aqueous acid solutions, brines, fracturing fluids, work over fluids, etc., and a method for treating a heterogenous permeable subterranean formation with such an aqueous fluid containing said additive is taught. The additive comprises a mixture of particulate oil soluble resins one being friable and the other pliable.

3,827,499

INJECTIVITY IN SUPPLEMENTED OIL RECOVERY

Charles J. Norton; David O. Falk, both of Denver, and Robert E. Evans, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Oct. 2, 1972, Ser. No. 293,952
Int. Cl. E21b *43/16*
U.S. Cl. 166—305 R **13 Claims**

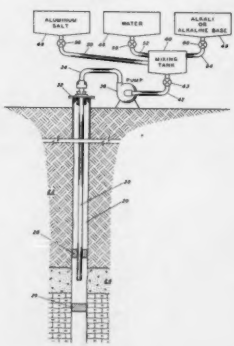
Oil recoveries with polyionic thickeners in aqueous slugs are improved by increasing the salt concentration in the slug to improve the injectivity and thereafter decreasing the salt concentration to obtain improved mobility control.

3,827,500

FORMATION PERMEABILITY MAINTENANCE WITH HYDROXY-ALUMINUM SOLUTIONS

Marion G. Reed, Hacienda Heights, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 176,073, Aug. 30, 1971, , which is a continuation-in-part of Ser. No. 875,026, Nov. 10, 1969, Pat. No. 3,603,399. This application June 5, 1972, Ser. No. 259,922The portion of the term of this patent subsequent to Sept. 7, 1988, has been disclaimed.
Int. Cl. E21b *43/16*
U.S. Cl. 166—305 R **16 Claims**



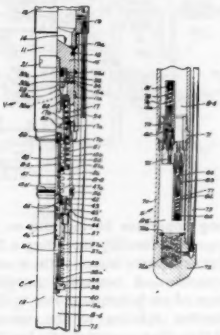
The disclosure provides a method of treating a water-sensitive formation penetrated by a well by contacting the formation with a hydroxy-aluminum solution having a ratio of the hydroxyl groups to the aluminum atoms in the range of 1.5 to 2.7.

3,827,501

METHOD AND APPARATUS FOR AUTOMATICALLY TERMINATING UNCONTROLLED FLOW OF WELL FLUIDS FROM A SUBSURFACE FORMATION

Joseph L. Johnson, Houston, and Shelby L. Guidry, Conroe, both of Tex., assignors to Udell Garrett, Inc., a Division of Macco Oil Tools, Inc., Houston, Tex.

Filed Apr. 9, 1973, Ser. No. 349,009
Int. Cl. E21b *43/12*
U.S. Cl. 166—314 **16 Claims**



Disclosed is a self-contained, automatic valve assembly designed to be anchored at a subsurface location within a well conduit which extends into a subterranean formation employed as a reservoir to store pressurized natural gas. The valve is preferably supported by a retrievable packer which anchors the valve within the conduit and forms a seal to force gas flowing in the conduit to flow through the valve. Operation of the valve is governed by a pressure charged dome control which acts through a bellows to move a valve stem to the closed position to terminate flow through the valve when the flowing well pressure drops by a predetermined amount relative to the dome pressure. Compensating means included in the dome control permit the value of the flowing well pressure required to close the valve to be raised or lowered by controlling the pressure at the wellhead.

In the method of the invention, the pressure acting on the dome control is automatically increased as gas is injected into the formation so that the differential between the dome pressure and the reservoir pressure remains at a substantially fixed value. During periods when gas is being removed from the well, the control pressure acting in the dome is periodically reduced by control of the wellhead pressure so that the valve remains open as the reservoir pressure falls. During gas injection or gas removal, the valve functions as a safety device and closes automatically to terminate well flow any time the flowing well pressure drops below the dome control pressure by an established value.

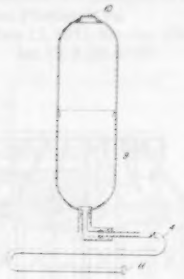
3,827,502

FIRE-EXTINGUISHING APPARATUS

Frank R. Lockwood, Northwood, England, assignor to Chubb Fire Security Limited, Sunbury-on-Thames, Middlesex, England

Filed Apr. 24, 1972, Ser. No. 246,666
Claims priority, application Great Britain, May 3, 1971, 12698/71; Sept. 17, 1971, 43474/71
Int. Cl. A62c *3/00*
U.S. Cl. 169—51 **14 Claims**

A fire extinguisher comprises a tube of thermoplastic material containing a fire-extinguishing liquid, the tube constituting a "continuous" detector and a continuous dispenser along the whole of its length. The strength of the tube wall is



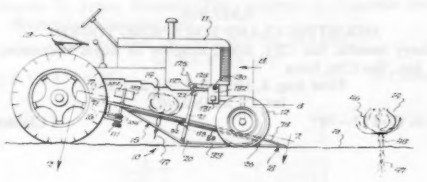
such that the tube will resist the internal pressure at ordinary temperatures but will burst at a temperature developed by a fire.

3,827,503

HARVESTING MACHINE FOR CABBAGE, OR THE LIKE

Carl J. Hansen, W. Shelby Rd., Middleport, N.Y. 14105

Filed July 27, 1972, Ser. No. 275,528
Int. Cl. A01d *27/04*
U.S. Cl. 171—38 **9 Claims**



A machine for harvesting a crop item such as a cabbage having a relatively large head located above ground and a stem-root combination connected to said head including a stem merging into an elongated root, comprising a frame, a connection for mounting the frame on a tractor, a snout at the leading end of the frame having an entry portion for receiving the stem, a conveyor comprising a pair of substantially parallel screws of opposite pitch leading upwardly away from said entry portion, means for rotating said screws in opposite directions to engage said stem and move said crop item upwardly along said conveyor, a pair of spaced rails underlying the head for guiding said head in its movement along said conveyor, stabilizing rails below said screws for engaging said stem-root combination to stabilize said crop item during its movement along said conveyor, and a cutter mounted on said frame remote from said snout for severing said stem from said head proximate said head when it reaches the end of movement on the conveyor.

3,827,504

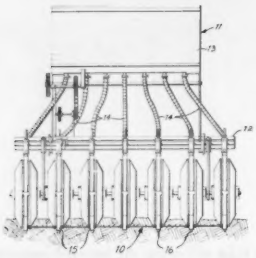
ROD WEEDER

Clarence R. Zimmerman, 6th Ave. and County Rd., Almira, Wash. 99103

Filed Mar. 21, 1973, Ser. No. 343,501
Int. Cl. A01b *39/19*
U.S. Cl. 172—44 **8 Claims**

A rod weeder for setting a moisture level slightly below ground level and for controlling weeds prior to seeding. The weeder is comprised of a plurality of rectangular rod or helical

coil members loosely encircling a wire rope or cable. The cable is held under tension between at least two furrow opening elements of a seed drill or other implement. The rod or coil



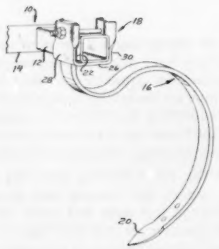
members are free to rotate on the cable. As the weeder is moved along through the ground, the rod or coil members rotate in a direction corresponding with the direction of travel to compact the soil below and to tear through weed roots.

3,827,505

MOUNTING CLAMP FOR SPRING TOOTH

Harry Sosalla, Sac City, Iowa, assignor to Royal Industries, Inc., Sac City, Iowa

Filed Aug. 4, 1972, Ser. No. 277,994
Int. Cl. A01b *23/02*
U.S. Cl. 172—707 **6 Claims**



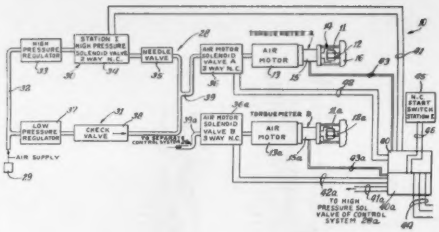
A mounting clamp for a spring tooth for securing the same to the frame of a spring tooth cultivator; and a cultivator including the same. Disclosed is a U-shaped clamp having generally parallel legs spaced from each other a distance equal to the sum of the width of the frame member and the width of the mounting end of the spring tooth. The forward one of the legs includes rearwardly directed wings having a length corresponding to the width of the mounting end of the spring tooth while the bight of the clamp is provided with an elongated slot through which the mounting end may be passed to be interposed between the frame and the forward leg. The forward leg supports the mounting end throughout its entire length and thereby reducing breakage while the wings preclude pivoting of the spring tooth that would destroy the cultivating pattern.

3,827,506

TORQUE CONTROL APPARATUS

Sydney Himmelstein, 1591 Sheridan Rd., Lake Forest, Ill. 60045, and Richard S. Tveter, R.R. No. 3 Witt Rd., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 288,379, Sept. 12, 1972, abandoned. This application Dec. 27, 1972, Ser. No. 318,864
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **26 Claims**



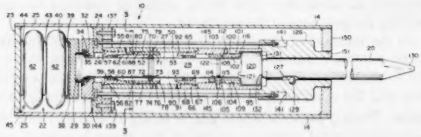
A torque-applying apparatus having one or more torque motors each arranged for forcibly threading a first threaded member into tightened association with a corresponding second threaded member. A control is provided for controlling the operation of each torque motor to firstly seat the first threaded member relative to the second threaded member by a rapid threading operation at a low torque. When the seated condition of all of the threaded members is sensed, the control automatically operates each torque motor to slowly apply gradually increasing higher torque to provide a preselected maximum-torque, tightened condition of the threaded members.

3,827,507

HYDRAULICALLY POWERED DEMOLITION DEVICE

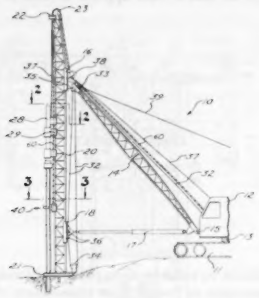
Raymond E. Lance, Fort Worth, Tex., assignor to Construction Technology, Inc., Grand Prairie, Tex.

Filed Sept. 18, 1972, Ser. No. 289,787
Int. Cl. B25d *9/02*
U.S. Cl. 173—15 **14 Claims**



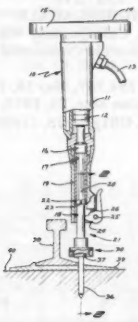
A hydraulic hammer for driving a demolition tool is disclosed. The hammer carries a piston which reciprocates in a cylinder. High pressure fluid drives the hammer to a retracted position to compress an air spring. The piston is momentarily held in the retracted position while an annular valve sleeve disposed about the piston is automatically moved downwardly by differential fluid pressure to open an annular passageway around the piston to permit the fluid to freely bypass the piston. The piston is then released so that the stored energy rapidly accelerates the hammer through an impact stroke without significant impedance from fluid and without displacing fluid from the cylinder. Since high pressure fluid is required only on the retraction stroke, the volume of fluid necessary to operate the hammer is essentially reduced by 50 percent, thus permitting either the force or frequency to be doubled for a given high pressure fluid source. A safety shuttle valve is also included which is cooperable with the tool member to bypass pressure fluid to reservoir until a predetermined load is imposed on the tool.

3,827,508
MECHANICAL SAFETY PILE MONKEY
Alan G. MacKinnon, Newcomerstown, Ohio, assignor to The Foundation Equipment Corporation, Newcomerstown, Ohio
Filed Jan. 5, 1973, Ser. No. 321,527
Int. Cl. E02d *7/02*
U.S. Cl. 173—112 **11 Claims**



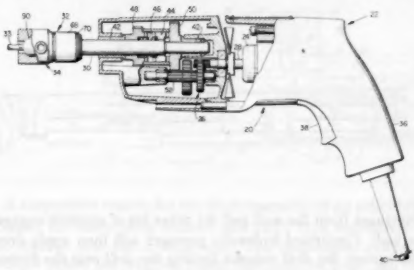
There is disclosed herein a pile driver apparatus having a lead supporting said pile driver, and means mounting a pair of laterally closing jaws for sliding movement along the lead below the pile driver. The jaws close around the lower end of an undriven pile and upon upward movement thereof, the jaws slide with respect to the pile and pull the pile into alignment with the pile driver.

3,827,509
FLOATING TYPE DRIVE SPIKE ACCESSORY
John O. Larson, Minneapolis, Minn., assignor to Lewis Bolt & Nut Company, Minneapolis, Minn.
Filed Dec. 8, 1972, Ser. No. 313,453
Int. Cl. B25c *3/00*
U.S. Cl. 173—128 **14 Claims**



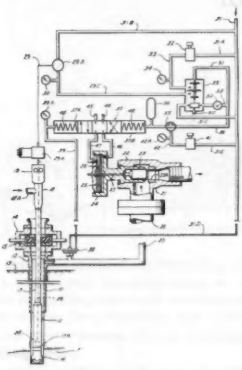
A tool or accessory for use in conjunction with paving breakers or similar power hammers for driving spikes having varying shaped heads and fully seating the heads. The tool includes a central striking member adapted to be reciprocably engaged in and driven by the power hammer. The striking member is encircled by a free floating casing adapted to fit over the spike head for proper guidance of the same, the casing having predetermined clearance to accommodate reciprocation of the fast moving striking member. The casing may be spring loaded. Means for easy assembly and disassembly are provided.

3,827,510
POWER TOOL
Robert Mazepa, Liverpool, N.Y., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed July 12, 1972, Ser. No. 271,127
Int. Cl. B23b *45/00*
U.S. Cl. 173—163 **11 Claims**



A power driven hand tool having a special ball joint coupling assembly that couples the power output spindle to a tool holder to provide for relative angular displacement between the tool holder and the spindle.

3,827,511
APPARATUS FOR CONTROLLING WELL PRESSURE
Marvin R. Jones, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Dec. 18, 1972, Ser. No. 315,804
Int. Cl. E21b *7/00*
U.S. Cl. 175—25 **10 Claims**

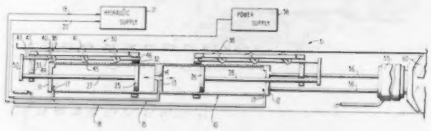


Apparatus is disclosed for controlling the bottom hole pressure of a well into which a drill string extends by automatically regulating a choke at the outlet of the well.

3,827,512
ANCHORING AND PRESSURING APPARATUS FOR A DRILL
Tibor O. Edmond, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Jan. 22, 1973, Ser. No. 325,773
Int. Cl. E21b *3/12*; E21c *19/00*
U.S. Cl. 175—94 **13 Claims**

An apparatus designed to hydraulically force a drill horizontally into a formation thereby drilling a borehole comprising a

cylinder having enclosed ends with a pair of pistons axially positioned inside the cylinder. Each piston has a piston rod journaled in the end of the cylinder and projecting from the end. The apparatus for anchoring the cylinder against the borehole comprises a plurality of anchors which are slidably journaled both to the outside of the cylinder and to the piston rod. An anchor engaging and disengaging means is coupled between the anchors and the piston rod so that when the pistons are pushed apart by hydraulic fluid one set of anchors



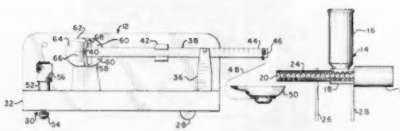
disengages from the wall and the other set of anchors engages the wall. Continued hydraulic pressure will then apply pressure against the drill column forcing the drill into the formation. When the maximum movement of the anchors has been reached, hydraulic fluid is then applied to the opposite sides of both pistons, whereupon one set of anchors which was engaged will become disengaged and retract while the other set of anchors which was disengaged will engage the borehole and apply application of hydraulic pressure against the drill column.

3,827,513

APPARATUS FOR MEASURING POWDER

Irving Epstein, 4216 Shoreclub Dr., Mercer Island, Wash. 98040

Filed Jan. 15, 1973, Ser. No. 323,978
Int. Cl. G01g *13/04, 13/02*
U.S. Cl. 177—121 **7 Claims**



An automatic gun powder weighing scale comprising a beam and a screw conveyor controlled by the rocking of the beam.

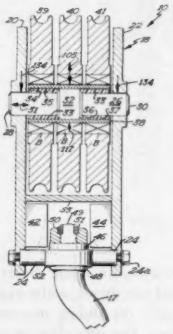
3,827,514

WEIGHT MEASURING HOOK BLOCK APPARATUS FOR CRANES

Richard S. Bradley, Fairmont, Minn., assignor to Weigh-Tronix, Inc., Armstrong, Iowa

Filed June 25, 1973, Ser. No. 373,487
Int. Cl. G01g *19/14, 3/14;* **G01l** *5/12;* **B66c** *1/40*
U.S. Cl. 177—147 **22 Claims**

A weight measuring hook block apparatus for cranes attachable between the crane and the hook or other load engaging device and usable on already existing cranes or as original equipment on hereafter constructed cranes comprises a hook block frame member supporting the ends of a substantially straight longitudinal bar which is elastically deformable in response to loading forces applied to the bar. A force applying member is positioned on the bar between the ends thereof to transmit forces to the bar which are exerted on the force applying member. One of the members is carried by the crane, and the remaining member is arranged to carry the load engaging device so that a load applied to one of the members



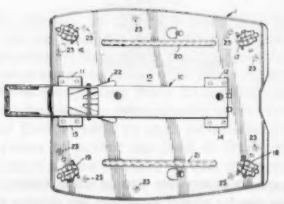
causes the remaining member to exert reaction force on the bar to deform the bar elastically. Strain gauge means operatively mounted on the bar detect deformation of the bar caused by these forces and provide a measurable response indicating the weight of the load carried by the load engaging device. Means are provided on the hook block frame member to transmit a radio signal to the crane cab, the radio signal including information informing the operator of the magnitude of the load.

3,827,515

WEIGHING SCALE

William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, both of Ill., assignors to Continental Sale Corporation, Chicago, Ill.

Division of Ser. No. 254,767, May 18, 1971, Pat. No. 3,743,040. This application Mar. 21, 1973, Ser. No. 343,549
Int. Cl. G01g *21/28, 21/08*
U.S. Cl. 177—241 **4 Claims**



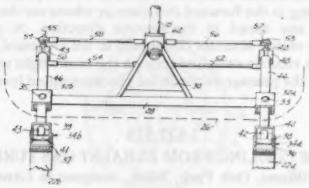
A weighing scale is provided having a number of features including a folding column or pillar, a new type of weighing mechanism, a new type of beam scale, and a new type of knob assembly for weight indicating means for a beam scale, all arranged in a compact form which is completely portable and adapted for packing, shipping and storage.

3,827,516

STEERING MECHANISM FOR SNOWMOBILE

George C. Lucia, P.O. Box 38, Suamico, Wis. 54173

Filed Jan. 29, 1971, Ser. No. 110,836
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R 8 Claims



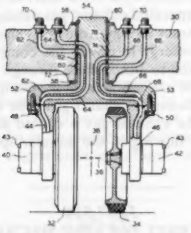
A steering mechanism for snowmobiles or similar ski borne vehicles which mechanism is actuated in response to movement of a selectively rotatable steering means such as a steering wheel to provide turning movement of the skis in the direction travel is desired and, at the same time, to provide tilting movement of the skis each about its own longitudinal axis. To achieve these combined results, a first pair of rods is connected between the steering means and a crank mechanism fixed to the skis for providing the turning movement. A second pair of rods is likewise connected between the steering means and the skis for providing respective tilt motion and a common actuator is connected to the steering means and both pair of rods for operating them.

3,827,517

VEHICLE DRIVE STEER WHEEL

William A. Williamson, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 7, 1972, Ser. No. 313,063
Int. Cl. B62d 9/00
U.S. Cl. 180—6.48 8 Claims



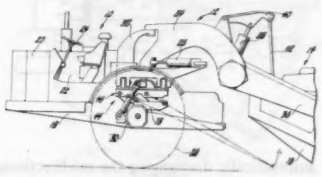
A dual path hydrostatic drive-steer wheel assembly for vehicles in which a pair of wheels is mounted for dirigible movement from a common rotatable shaft, the wheels being drivable and controllable independently at either the same or different rotative speeds so as to provide vehicle traction drive and to steer the vehicle by causing the wheels to rotate with the common shaft to any selected steering angle.

3,827,518

SUSPENSION SYSTEM FOR HITCH ASSEMBLY

Bernard A. Kuhl, Mayfield Heights, and John B. Mason, Hudson, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1973, Ser No. 390,694
Int. Cl. B60g 5/06
U.S. Cl. 180—12 2 Claims



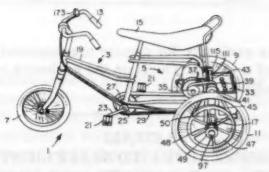
A suspension system for the hitch assembly of an articulated scraper for controlling bounce and pitch type movement of the tractor and the trailing unit. The suspension system is located below the steering frame and includes front and rear links of equal length that are arranged so that straight lines passing through the centers of the pivotal connections of each link intersect at a point located between the front and the rear axles of the vehicle. A spring device is pivotally connected between the hitch assembly and the tractor for cushioning relative movement therebetween.

3,827,519

VEHICULAR EXERCISER APPARATUS

John R. Snider, 1231 N. Lawrence Expy., No. 381, Sunnyvale, Calif.

Filed Oct. 15, 1971, Ser. No. 189,614
Int. Cl. B62d 61/06
U.S. Cl. 180—25 R 2 Claims



A vehicular exerciser apparatus comprising a three-wheeled cycle having a saddle seat for supporting an individual and pedal means for propelling said cycle manually and an electrical motor train means for propelling said cycle independent from the manual power means and in combination with the manual propelling means.

3,827,520

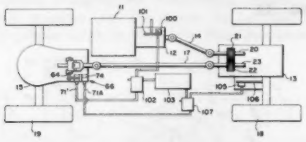
CLUTCH MEANS FOR A 4 × 4 DRIVE TRANSFER VEHICLE

James F. Mueller, Lakewood, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed June 25, 1973, Ser. No. 373,238
Int. Cl. B60k 17/02
U.S. Cl. 180—44 R 9 Claims

A truck-tractor drive arrangement of the type which automatically converts rear wheel drive into four wheel drive includes a housing attached to the input end of a standard front drive-steer axle. Within the housing is a unidirectional clutch for driving the front wheels in a forward direction whenever the rear wheels lose traction and slip. An automatic lockout of

the unidirectional clutch is provided for locking the arrangement into four wheel drive when drive occurs in a rearward direction. Alternatively, the lockout may also include provi-



sions for automatically disengaging the unidirectional clutch when the tractor is travelling at highway speeds in the forward direction.

3,827,521

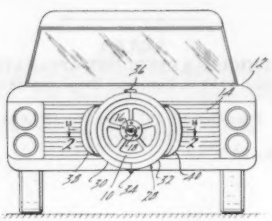
SPARE TIRE ENCLOSURE

Emery H. Welsh, 3390 E. Cook Rd., Grand Blanc, Mich. 48439

Filed Oct. 30, 1972, Ser. No. 302,261

Int. Cl. B60k *11/02*

U.S. Cl. 180—54 A **8 Claims**



A spare tire enclosure for a spare tire mounted in front of the radiator of a vehicle. Ducts on the enclosure are directed toward the radiator.

3,827,522

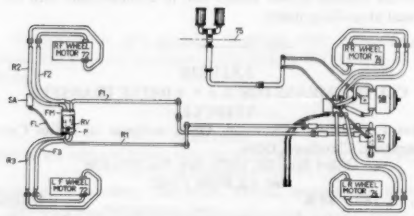
FLUID PRESSURE ACTUATED BRAKE LIGHT SWITCH

Kenneth M. Krause, Saukville, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Aug. 10, 1973, Ser. No. 387,344

Int. Cl. B60t *17/00*

U.S. Cl. 180—66 R **8 Claims**



A hydraulically propelled material handling vehicle, such as an end loader or lift truck, operable off-road and over-the-road, requires rear-mounted brake lights for over-the-road operation which illuminate to warn whenever the vehicle is braked (decelerated) while traveling in the forward direction or whenever the vehicle is traveling at any speed in the reverse direction. The vehicle wheels are driven by hydraulic motors supplied with fluid through a hydraulic circuit from engine-driven pumps and the vehicle's direction of movement and rate of speed are determined by a single pedal control in the operator's cab. The hydraulic circuit comprises a relief valve manifold having a passage wherein fluid pressure exceeds a predetermined level when the vehicle is braked (decelerated) while moving in the forward direction or whenever the vehicle moves at any speed in the reverse direction. A pressure responsive switch actuator connected to the aforesaid passage operates an electric switch to turn on the brake light whenever pressure in the passage exceeds the predetermined level.

3,827,523

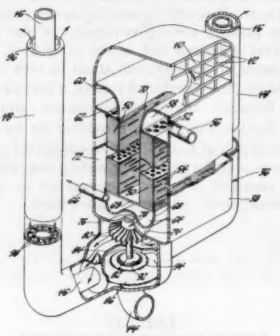
ENGINE COOLING FROM EXHAUST GAS TURBINE

Dick H. Williams, Oak Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 10, 1973, Ser. No. 359,184

Int. Cl. B60k *11/04*

U.S. Cl. 180—68 R **3 Claims**



A combined cooling and exhaust system for a vehicle such as a truck powered by a liquid-cooled engine including a housing enclosing a coolant-filled radiator and having an air inlet at one end adapted to be positioned in the stream of air flowing over the moving vehicle. A rotary type compressor is located adjacent the air outlet portion of the radiator and is adapted to draw air through the radiator from the air outlet. The rotary compressor is connected by a drive shaft to a rotary type turbine located in a separated exhaust gas passage of the housing and adapted to extract energy from the exhaust gas and convert it into rotary energy to power the compressor. Air from the radiator is ducted to atmosphere through a relatively large diameter outlet tube extending from the compressor which encircles a smaller diameter exhaust gas tube connected to the turbine whereby the exhaust gas is cooled and exhaust noise muffled by the air flowing in the annular space between the two tubes.

3,827,524

FREE WHEEL LOCKING MECHANISM

Tooru Kagata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

Filed Nov. 3, 1972, Ser. No. 303,363

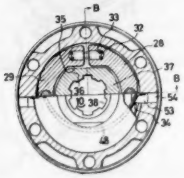
Claims priority, application Japan, Nov. 29, 1971, 46-112081

Int. Cl. B60k *25/00*

U.S. Cl. 180—70 **4 Claims**

A free wheel locking mechanism for a vehicle comprising, an axle shaft mechanically connected to an engine of the vehi-

cle, a drive member connected to the axle shaft and rotatable thereby, a non-drive member operatively connected to the wheels of the vehicle so as to rotate therewith, means for selectively transmitting the driving force from the engine to the axle shaft, frictional means disposed between the drive member and the non-drive member, the frictional means being automatically and frictionally engaged with the non-drive member or automatically disengaged from the non-drive



member according to the control of the driving force being transmitted to the axle shaft, and manual operating means independently manually controlling the connection between the non-drive member and frictional means, whereby the automatic operation is normally attained by frictional means, and the manual operation is independently attained by manual operating means when engine braking of four wheels is needed.

3,827,525

ENERGY ABSORBING CONSTRUCTION FOR FRONT-ENGINED MOTOR VEHICLES

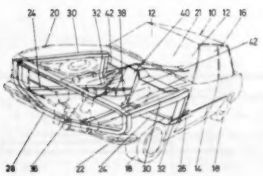
Bertold Felzer, Russelsheim/Main, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1973, Ser. No. 354,703

Claims priority, application Germany, May 24, 1972, 2225089

Int. Cl. B60r *21/00*

U.S. Cl. 180—82 R **5 Claims**



A front-engined motor vehicle has two convergent slide rails extending from the engine compartment into a large-mouthed transmission tunnel extending into the vehicle passenger compartment and diminishing in cross-section rearwardly of the mouth. The convergent slide rails and the transmission tunnel resist in an energy-absorbing manner rearward movement of the engine consequent upon a frontal impact on the vehicle.

3,827,526

AUTOMOTIVE SECURITY SYSTEM AND SOLENOID LOCK FOR SAME

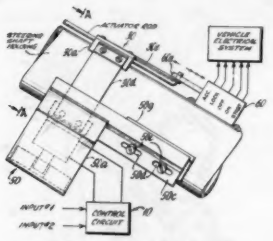
Arthur H. Smith, Maplewood, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Feb. 5, 1973, Ser. No. 329,592

Int. Cl. B60r *25/00*

U.S. Cl. 180—114 **8 Claims**

A system including a solenoid and locking block moveable relative to one another and mounted on the steering shaft housing of an automobile to enable actuation of the ignition switch from the LOCK position to the ACCESSORY, OFF ON and START positions only during energization of the solenoid and consequent retraction of a spring-loaded locking pin



from the locking block. A modified locking block enables actuation of the ignition switch between the LOCK and ACCESSORY positions when the solenoid is de-energized.

3,827,527

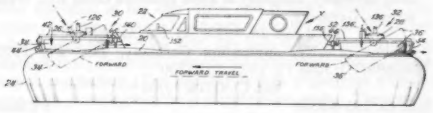
GIMBAL GROUND EFFECT VEHICLES

William R. Bertelsen, Rock Island, Ill.

Continuation-in-part of Ser. No. 779,988, Nov. 29, 1968, abandoned. This application Jan. 18, 1971, Ser. No. 107,350

Int. Cl. B60v *1/14*

U.S. Cl. 180—120 **10 Claims**



Ground effect vehicles including power means for providing a flow of gas and gimbal mounted flow-directing means for selectively directing the flow of gas into a lift component and a propulsion or control component. The propulsion or control component acts directly from the flow-directing means and is directed over the top of a deck or platform. Single and multi-engine versions are disclosed, and eye lid devices which cooperate with the flow-directing means to reduce loss of lift-gas are described.

3,827,528

LOW COST AUXILIARY HYDROSTATIC DRIVE FOR TRUCKS

Walter M. Shaffer, Peoria, Ill., assignor to Towmotor Corporation, Mentor, Ohio

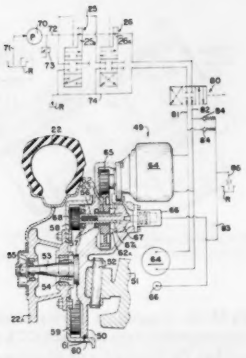
Filed Oct. 10, 1972, Ser. No. 296,153

Int. Cl. B60k *7/00*

U.S. Cl. 180—44 M **8 Claims**

By employing priority valving for fluid pressure normally utilized to operate hydraulic lift and tilt circuits in a lift truck, the fluid output of an engine driven pump normally powering the lift and tilt circuits can be used, when these circuits are idle, to power auxiliary hydraulic motors mounted on the lift truck's dirigible wheels to provide four wheel drive in the lift truck in its low speed ranges. A simplified control lever system, which is mechanically interconnected with the main

transmission control linkages of the lift truck, controls both the direction and operation of the auxiliary drive so it is coordinated with that of the main transmission without complex control systems. Also, a simplified hydrostatic wheel drive unit is provided.



3,827,529

SOUND DAMPENER FOR A FLAT ENGINE MOUNTED IN THE STERN OF A MOTOR VEHICLE

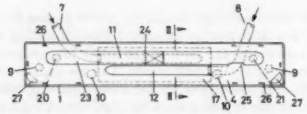
Gunther Frietzsche, and Peter Krause, both of Edenkoben/Pfalz, Germany, assignors to Fiem Heinrich Gillet KG, Weinstrasse, Germany

Filed Jan. 26, 1973, Ser. No. 326,880

Claims priority, application Germany, Jan. 27, 1972, 7202898[U]; June 13, 1972, 2228700

Int. Cl. G10k *11/04*

U.S. Cl. 181—33 D **5 Claims**



The invention concerns a sound dampener or muffler for a flat engine mounted in the stern of a motor vehicle which is made of two circumferentially joined shells that form a housing divided into two chambers by a separating wall, with input and output pipes passing through the shell halves and where the wall supports the tuning elements and is provided with perforations for connecting the tuning elements.

3,827,530

VIBRATION-DAMPING SYSTEM

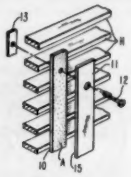
Arthur R. Heath, 6200 Afton, Dayton, Ohio 45415

Filed July 2, 1973, Ser. No. 375,728

Int. Cl. E04b *1/84*

U.S. Cl. 181—33 A **10 Claims**

This disclosure is directed to a system for reducing significantly or eliminating radiator grill vibration noise in recreational vehicles occurring at comparatively high speeds. The vibration damping system provided is comprised of a combination of loner foam rubber or plastic strips located behind the horizontal grill members yet in contact therewith and a plurality of strut-strip members fastened to the outer face of said horizontal grill members wherein resilient foam rubber or plastic strip members are located between comparatively rigid strut members and the horizontal grill members.



3,827,531

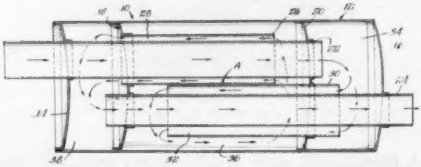
EXHAUST MUFFLER

Joseph A. Hansen, Stoughton, Wis., assignor to Nelson Muffler Corporation, Stoughton, Wis.

Filed Aug. 17, 1973, Ser. No. 389,259

Int. Cl. F01n *1/08*

U.S. Cl. 181—53 **8 Claims**



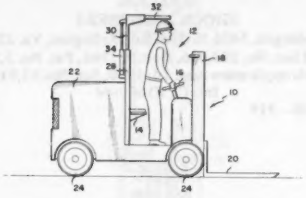
The present invention relates generally to exhaust mufflers and more particularly to the improvements in exhaust mufflers for use with internal combustion engines. The exhaust muffler disclosed herein comprises an elongate muffler housing and a plurality of conduits disposed in substantial parallelism with the longitudinal axis of the housing. Inlet and outlet conduits are each supported at one extremity within the end wall or closure of the housing and additional conduits are telescopically associated with said inlet and outlet conduits. These telescopically associated conduits are supported by flange means within the housing so as to present the elongate annular passages opening at opposite extremities into said housing, said telescopically associated conduits being peripherally joined so as to enhance lateral rigidity thereof within the housing.

3,827,532

COLLAPSIBLE OVERHEAD GUARD

Paul R. Minich, Jr., and Thorkild Jensen, both of 6400 Goldsboro Rd., Bethesda, Md. 20036

Filed May 18, 1973, Ser. No. 361,609
Int. Cl. B60j 7/00; B60r 21/02
U.S. Cl. 187—9 5 Claims



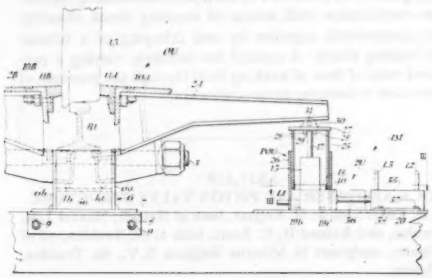
Industrial vehicle overhead guard providing operator protection over a range of vertical positions may be opened to allow for necessary movement of the vehicle operator.

3,827,533

OPERABLE SKATE TYPE OF RAILWAY CAR RETARDER

Peter M. Noble, Valencia, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Jan. 2, 1973, Ser. No. 320,310
Int. Cl. B61k 7/08
U.S. Cl. 188—62 10 Claims



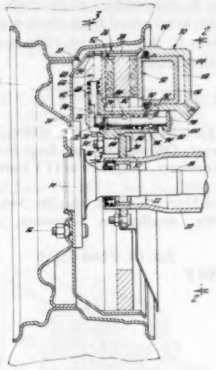
This invention relates to an operable skate type of railway car retarder including a plurality of inner and outer levers pivotally supported on the cross ties and physically disposed on opposite sides of a track rail. Each of the inner and outer pivotal levers supports an elongated braking element which is disposed parallel to the track rails. Each of the outer pivotal levers of the car retarder is operated by an actuating mechanism. Each actuating mechanism includes a power operating unit as well as a locking unit. The power operating unit utilizes a fluid piston and cylinder as well as slide piston and guide cylinder to raise the outer lever to cause the braking element to assume a braking position. The locking unit includes a fluid piston and cylinder operating a lock block which engages the slide piston and locks the lever in its braking position or disengages the slide position and releases the lever allowing the retarder to assume its nonbraking position.

3,827,534

DISC BRAKE PARKING BRAKE

Frank W. Brooks, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 25, 1973, Ser. No. 382,442
Int. Cl. F16d 63/00
U.S. Cl. 188—68 4 Claims



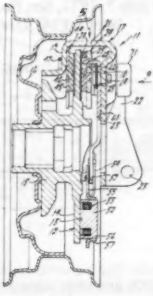
A disc brake has a peripherally mounted and driven annular disc and a fixed caliper assembly with a caliper leg on either side of the disc and a caliper mounting section extending across the disc radially inward thereof. The inboard caliper leg has a hydraulically actuated piston and cylinder for service brake actuation. The outboard caliper leg has a radially movable parking bolt which is selectively engageable with a mating slot, several circumferentially spaced slots for this purpose being provided in the disc drive and retainer member. The caliper mounting section has a cam rotatably received therein and engaging the parking bolt. The cam is actuated through a rotatable shaft and lever connected to a suitable parking brake control mechanism. The parking bolt is urged into engagement with a mating slot by a compression spring. The cam is rotated in one direction to permit the parking bolt to so engage the slot, and is rotatable in the other direction to disengage the bolt.

3,827,535

ELECTRICALLY OPERATED DISK BRAKE AND AUTOMATIC ADJUSTING MECHANISM

Neil R. Hoffman, Saukville, and Johann H. Jansen, Milwaukee, both of Wis., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Sept. 11, 1972, Ser. No. 288,134
Int. Cl. F16d 65/34
U.S. Cl. 188—138 11 Claims



An electrically operated disk type brake. The electric operator includes an electromagnet that is supported con-

tiguous to the rotor and which, when actuated, moves axially into engagement with the rotor and rotates slightly with it. Means including tilting pin operators interconnect the electromagnet with the brake pads for actuating the brake pads in response to rotation of the electromagnet with the rotor. An improved automatic adjusting device is incorporated that is responsive to circumferential movements of the brake pads for adjusting the at rest position of the pads. Substantially all of the brake parts are formed from sheet metal and the electromagnet is press fit into its supporting member to reduce cost of the overall assembly.

3,827,536

BRAKE LINING WEAR ADJUSTING DEVICE

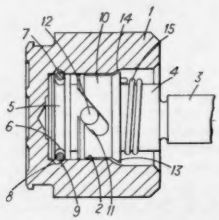
Siegfried Ohmayer, Offenbach, and Karl Storzel, Sprendlingen, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,019

Claims priority, application Germany, Apr. 19, 1972, 2218929

Int. Cl. F16d 65/56

U.S. Cl. 188—196 F **6 Claims**



This relates to an adjusting device to compensate for brake lining wear. In known adjusting devices there is provided an additional part releasably connected in an actuating piston to serve as a safety device if the piston stroke is excessive. According to the present invention this additional part is eliminated by providing a driving bushing with a friction surface shaped like a cone. This conical friction surface is enlarged in a direction opposite to the adjusting direction. This conical friction surface directly engages a conical friction surface present on the inner surface of the actuating piston.

3,827,537

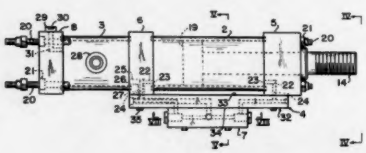
HYDRAULIC SHOCK AND SWAY SUPPRESSOR

Henry E. Haller, Jr.; Henry F. Huettner, both of Pittsburgh, and Elliott E. Martin, Jr., Valencia, all of Pa., assignors to National Valve and Manufacturing Company, Pittsburgh, Pa.

Filed July 7, 1972, Ser. No. 269,769

Int. Cl. F16f 9/34

U.S. Cl. 188—314 **8 Claims**



An hydraulic shock and sway suppressor, which will absorb normal thermal movement of a piping system but will resist vibration and shock in the system or other equipment includes a cylindrical reservoir in axial alignment with a piston-cylinder assembly of the suppressor and a manifold on the piston-cylinder assembly which provides fluid communication between the reservoir and a valve assembly and between the valve assembly and both sides of the piston in the piston-cylinder assembly. Relief valve means may be disposed between the manifold and the valve assembly.

3,827,538

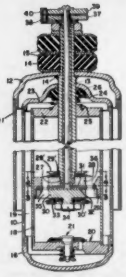
SHOCK ABSORBERS

Frank S. Morgan, 5405 N. 27th Rd., Arlington, Va. 22207

Division of Ser. No. 593,016, Nov. 9, 1966, Pat. No. 3,548,977. This application Aug. 14, 1970, Ser. No. 63,919

Int. Cl. F16f 9/44

U.S. Cl. 188—319 **7 Claims**



Remote controlled infinitely variable fluid shock absorber operable manually or automatically in response to changes in static pressure of a variable spring system, speed indicating signaling device or actuation of the hydraulic breaking system.

The combination with means of securing shock absorber piston components together by end crimping of a tubular outer bearing sleeve. A control for infinitely varying a preselected ratio of flow of working fluid through the passages of pistons used in damping device cylinders.

3,827,539

SHOCK ABSORBER AND PISTON VALVE STRUCTURE

John H. Fader; Johan H. Keijzer, both of Hasselt; Marcel J. R. Graulus, and Roland H. C. Beets, both of St. Truiden, all of Belgium, assignors to Monroe Belgium N.V., St. Truiden, Belgium

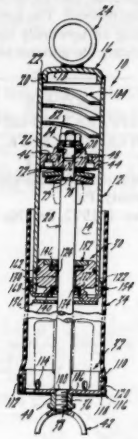
Division of Ser. No. 45,867, June 12, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,811

Int. Cl. F16f 9/24, 9/32

U.S. Cl. 188—322 **4 Claims**

A shock absorber comprising an elongated cylindrical pressure cylinder having a piston reciprocally disposed therewithin and connected to a piston rod extending outwardly from one end thereof, the piston rod carrying a dirt shield which extends coaxially of the pressure cylinder and in partial surrounding relationship therewith. The pressure cylinder is adapted to be filled with preselected quantities of a hydraulic damping fluid and a pressurized gas for damping reciprocal movement of the piston therewithin. The piston is provided with a novel valve arrangement which controls the compression and rebound characteristics of the shock absorber, and one end of the pressure cylinder is provided with a novel rod guide assembly which is designed so as to provide for convenient charging of the cylinder with the aforesaid pressurized gas. The interior of the pressure cylinder is provided with a generally helically

shaped baffle arrangement which is compressible axially within the cylinder in response to reciprocal movement of the



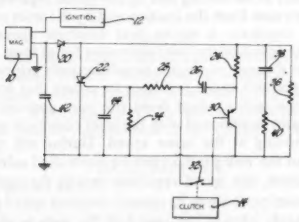
piston therein and functions to prevent undesirable foaming or aeration of the hydraulic fluid during operation of the shock absorber.

3,827,540

CLUTCH AND IGNITION INTERLOCK

John F. Bolinger, and Douglas B. Leathem, both of Michigan City, Ind., assignors to Meridian Industries, Inc., Southfield, Mich.

Filed Aug. 17, 1972, Ser. No. 281,354
Int. Cl. B60k *21/00*
U.S. Cl. 192—.084 **9 Claims**



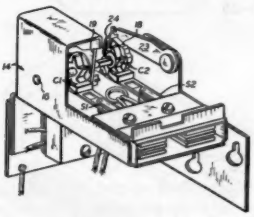
An interlock circuit is provided for use with machines to prevent starting of the prime mover unless an interlock switch is in a safe condition. In the illustrative embodiment the interlock circuit is adapted to prevent starting of the engine of a lawn tractor unless the clutch thereof is disengaged. After the engine is started the clutch may be engaged without killing the engine. The circuit comprises a controlled rectifier connected across the magneto primary coil through a rectifier. The voltage pulses applied across the output of the controlled rectifier are also applied to the gate thereof through a capacitor in a charging circuit which includes the input of the controlled rectifier. The interlock switch is connected across the input of the controlled rectifier and when it is opened, as by engagement of the clutch, the applied voltage pulses to the input of the controlled rectifier through the charging circuit causes the controlled rectifier to conduct on each pulse. Accordingly the ignition system is disabled and the engine cannot be started. When the interlock switch is closed the input of the controlled rectifier is short circuited and the controlled rectifier cannot be turned on; hence the ignition voltage is unaffected and the engine can be started. After the engine is started the clutch may be engaged and the interlock switch opened without killing the engine because the discharging circuit of the capacitor is altered so that the capacitor does not discharge sufficiently between pulses to take sufficient charging current to turn on the controlled rectifier.

3,827,541

REPLACEABLE CAM SWITCHING DEVICE FOR A COIN CONTROLLED MACHINE

Harry Greenwald, Whitestone, and Robert Tuppo, Elmhurst, both of N.Y., assignors to Walter Kidd & Company, Inc., Clifton, N.J.

Filed June 18, 1973, Ser. No. 370,868
Int. Cl. G07f *5/20*
U.S. Cl. 194—1 L **2 Claims**



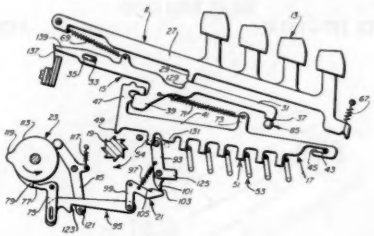
A switching device for a coin controlled machine in which operation of the machine is effected by closing both of two series connected switches by the action of two rotary indexed cams. The number of coin slide movement cycles required to effect concurrent closing of both switches is determined by the ratio of the number of lobes on the cams, and can be changed by replacing one of the cams.

3,827,542

CHARACTER STORAGE ARRANGEMENT FOR A POWERED TYPEWRITER ACTION

Rudolf Blum, Nuernberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuernberg, Germany

Filed Nov. 21, 1972, Ser. No. 308,587
Claims priority, application Germany, Nov. 29, 1971, 2159070
Int. Cl. B41j *23/02*
U.S. Cl. 197—16 **3 Claims**



A type action of a power driven single element typewriter is provided with a storage arrangement enabling type characters to be successively printed in response to the successive operation of corresponding type keys even though the type keys are operated prior to the completion of a previously initiated

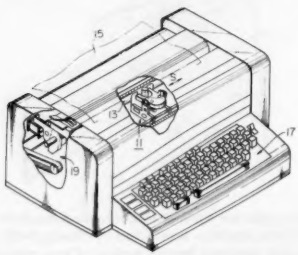
printing cycle. The orienting movement of the printing element is determined by pawls moved to an operating position by the operation of a type action for engagement with a moving member undergoing a predetermined stroke. The orienting pawls are operably engagable with the moving member only at the beginning of an orienting movement of the single print element, and orienting pawls which are moved to the operating position after the beginning of an orienting movement are resiliently maintained at the operating position for operable engagement with the moving member upon completion of the previous orienting movement.

3,827,543

TYPEWRITING MECHANISM FOR A TYPEWRITER MACHINE

Reijiro Kawano; Kazuhiro Goda, both of Kawasaki; Hiroshi Yamakawa, Tokyo, and Masayoshi Otsuka, Kawasaki, all of Japan, assignors to Kurosawa Tel-Communications Limited, Tokyo, Japan

Filed May 22, 1972, Ser. No. 255,697
Int. Cl. B41j *1/32*
U.S. Cl. 197—55 **8 Claims**



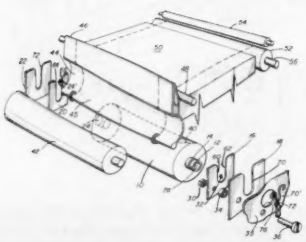
A typewriting mechanism for a typewriter machine in which mechanism a swingable hammer bracket supporting a typewheel having a number of types formed on the surface of the typewheel, is driven by a single rotary magnet without being disconnected from a type-character selecting mechanism so that the typewheel strikes against the platen and a type-character on the surface of the typewheel is printed on the typewriter paper around the platen. The single rotary magnet also actuates a locking mechanism of the typewheel and a lever for driving an ink ribbon feed mechanism.

3,827,544

STRIP CHART RECORDING ROLL AND SYSTEM FOR SUPPORTING ROLL DURING RECORDING

John R. Smith, Winchester, Mass., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Aug. 16, 1972, Ser. No. 281,073
Int. Cl. B41j *15/00*
U.S. Cl. 197—133 R **3 Claims**



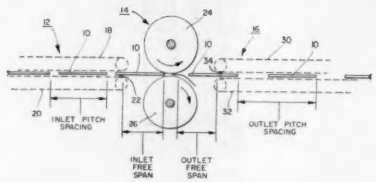
The specific embodiment provides a system for supporting a strip chart recording roll where the recording roll includes an elongated core having strip chart recording material rolled thereabout. The core has at least one cylindrical end protruding from the rolled material, and the protruding end has an annular recess formed thereabout. The specific embodiment also provides a yoke having an upwardly opened substantially U-shaped portion for seating the annular recess therein.

3,827,545

METHOD AND APPARATUS FOR CHANGING THE SPACING BETWEEN DISCRETE, FLEXIBLE WEB PRODUCT

Eric S. Buhayar, Swathmore, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Filed Dec. 4, 1972, Ser. No. 311,453
U.S. Cl. 198—34 **19 Claims**



Method and apparatus for changing the spacing between discrete, flexible web products employ, in seriatim, an inlet conveyor moving at a first predetermined speed, a speed regulator, and an outlet conveyor moving at a second predetermined speed. The speed regulator moves through a repeating cycle; each cycle including, sequentially, a first constant speed period at which the speed is the same as the inlet conveyor speed, a first changing speed period, a second constant speed period at which the speed is the same as the outlet conveyor speed, and a second changing speed period terminating in the first constant speed period. Discrete web products are directed in a downstream direction at a constant inlet pitch spacing by the inlet conveyor toward the speed regulator. A web product entering the speed regulator initially is gripped simultaneously at its leading end by the speed regulator and at a region upstream from the leading end by the inlet conveyor. The speed regulator is in its first constant speed period matching the speed of the inlet conveyor for at least a part of the time that the web product is simultaneously gripped by the inlet conveyor and speed regulator to assure that transfer of control of the web product from the inlet conveyor to the speed regulator is achieved with the inlet conveyor and speed regulator moving at the same speed. During the time that movement of the web product can be controlled solely by the speed regulator, the speed regulator moves through its first changing speed period into its second constant speed period to correspondingly change the speed of the web product from that of the inlet conveyor to that of the outlet conveyor. The web product is then directed to the outlet conveyor, and initially is gripped simultaneously at its leading end by the outlet conveyor and at a region upstream from the leading end by the speed regulator. The speed regulator is in its second constant speed period matching the speed of the outlet conveyor for at least a part of the time that the web product is simultaneously gripped by the speed regulator and outlet conveyor to assure that transfer of control of the web product from the speed regulator to the outlet conveyor is achieved with the speed regulator and outlet conveyor moving at the same speed. After movement of the web product is solely controlled by the outlet conveyor the speed regulator experiences its second changing speed period and returns to its first constant speed prior to having any effect upon the movement of the next adjacent web product being directed by the inlet conveyor to the speed regulator. The cycle is then repeated. In this manner the outlet pitch spacing of the web products at the outlet conveyor will

be greater than the inlet pitch spacing of the web products if the speed of the outlet conveyor is faster than the speed of the inlet conveyor, and the outlet pitch spacing will be less than the inlet pitch spacing if the speed of the outlet conveyor is slower than the speed of the inlet conveyor.

3,827,546

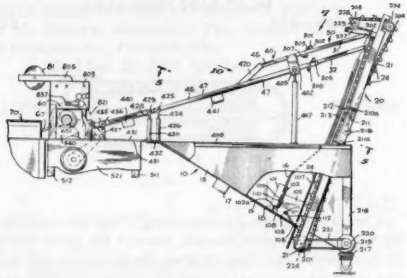
COIN WRAPPING MACHINE

Peter Pilat, Rockaway, N.J., assignor to The National State Bank, Elizabeth, N.J.

Division of Ser. No. 759,322, Sept. 12, 1968, Pat. No. 3,608,271. This application Apr. 29, 1971, Ser. No. 138,774

Int. Cl. B65g *47/18*

U.S. Cl. 198—53 **6 Claims**



A machine is disclosed preferably for wrapping coins, and includes a conveyor and inclined plate means for assembling a plurality of coins on edge adjacent one another to form a roll of loose coins and means for wrapping a sheet of material around the loose coins. This disclosure is particularly directed to the hopper means for storing the loose coins and the conveyor means which comprises a plurality of buckets, spaced chain means for supporting the buckets, and support means for the spaced chain means. The buckets are supported so that they travel in two different paths including a generally vertical path and a generally horizontal path. The coins being discharged from the chutes as they assume the horizontal path of travel.

3,827,547

GLASS SHEET CONVEYING APPARATUS

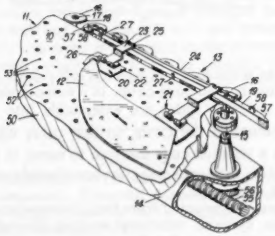
Phillip Sidney Nixon, Skelmersdale, England, assignor to Pilkington Brothers Limited, Lancashire, England

Filed Apr. 10, 1972, Ser. No. 242,418

Claims priority, application Great Britain, Apr. 16, 1971, 9692/71

Int. Cl. B65g *13/02*

U.S. Cl. 198—127 R **6 Claims**



Apparatus for conveying a succession of articles, such as glass sheets, by contact with an adjacent edge portion of each article, along a conveying path such as a gas hearth, comprises a plurality of elongated carriage members each carrying one or more drive-transmitting elements (e.g. transverse arms) for engaging edge portions of the articles, particularly of articles presenting indented or skewed edges, and a set of rotary drive elements conical discs on vertical spindles for propelling the carriage members by frictional engagement. The drive elements may be used without the carriage members for directly driving straight-edged articles. A roller conveyor with means for driving the carriage members frictionally alongside the conveyor rollers may precede the gas hearth.

3,827,548

BELT CONVEYOR FOR SHEET MATERIAL

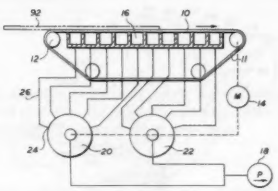
Masaharu Matsuo, No. 3-17, Chome, Higashi Komagata, Sumida-ku, Tokyo, Japan

Claims priority, application Japan, Sept. 11, 1972, 47-90340

Filed Mar. 21, 1973, Ser. No. 343,382

Int. Cl. B65g *15/00;* **E03b**

U.S. Cl. 198—184 **1 Claim**



A perforated conveyor belt for cardboard sheets and the like travels over a row of suction chambers sequentially evacuated in synchronization with the belt travel by a suction pump connected with the chambers through a rotary distributor valve in which the orifice of an exhaust conduit in the valve rotor sweeps circumferentially offset ports on the valve shell, the ports being connected to the chambers respectively. The circumferential width of the orifice may be adjusted for varying the number of simultaneously evacuated chambers. The valve rotor and the belt are driven synchronously by a common motor.

3,827,549

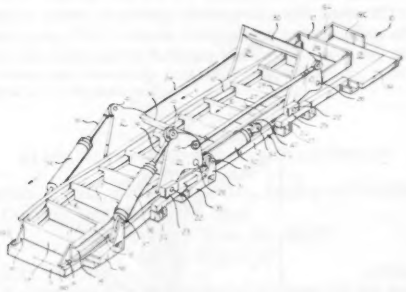
EXTENDED COOLING CONVEYOR

William Allan Hunter, Palatine, Ill., assignor to Hunter Automated Machinery Corporation, Schaumburg, Ill.

Filed Mar. 16, 1973, Ser. No. 341,873

Int. Cl. B65g *25/08*

U.S. Cl. 198—221 **3 Claims**



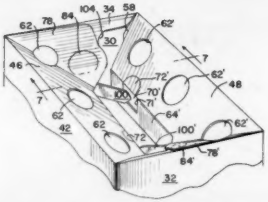
An extended cooling conveyor for moving poured foundry moulds in step-by-step fashion to cool the same comprises a fixed base frame supporting the moulds, and a frame movable in a closed path with respect to the base frame and including spaced mould engaging members supported thereby and alternately engaged with moulds to move same with respect to

the fixed frame and disengaged therefrom to return to a position of engagement with a mould displaced from the previous mould position. Structure is provided for imparting desired movement to the movable frame, and comprises paired laterally spaced rocking members also spaced lengthwise of the fixed frame and having a pivoted connection to a fixed abutment and a slide connection between the rocking members and the movable frame.

3,827,550
BOTTLE CARRIER

Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Sept. 20, 1972, Ser. No. 290,539
Int. Cl. B65d *5/10, 5/36, 5/48*
U.S. Cl. 206—181 **20 Claims**

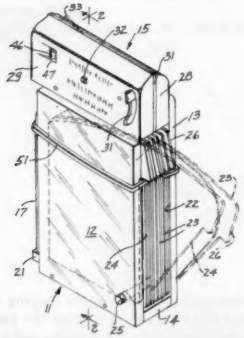


A collapsible carrier for beverage bottles or the like which is formed from a blank of foldable sheet material cut and scored to provide connected side and end wall forming panels and cooperating top and bottom wall forming panels hinged to the top and bottom edges of the side wall forming panels, the top wall forming panels being foldable between the side and end wall panels when the carrier is collapsed and when the carrier is set up opening automatically for assembly with the bottles and having spaced apertures for accommodating top portions of the bottles, together with hinged marginal portions which move into bottle separating position, and the bottom wall forming panels having overlapping margins with latching and locking elements, together with hinged bottle separating panel and tab members.

3,827,551
SHOPPER'S KIT

Harry E. Croft, 5424 W. Ferdinand Ave., Chicago, Ill. 60644

Filed July 7, 1972, Ser. No. 269,555
Int. Cl. A45c *11/34;* **B65d** *85/00*
U.S. Cl. 206—214 **11 Claims**

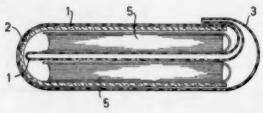


A receptacle for insert-type envelopes and writing panels having a head assembly on one end including a cutting blade being normally locked in a concealed position, together with containers for selectively holding said envelopes and panels within the receptacle. A finger engaging portion is provided to move the blade into a partially exposed position for use. The invention also includes a writing instrument on which is mounted a normally guarded cutter blade.

3,827,552
REINFORCED PACKAGE AND METHOD FOR ITS PREPARATION

Veikko Ilmari Janhonen, Vilkinmaentie 19, 00560 Helsinki 56, Finland

Filed Nov. 20, 1972, Ser. No. 307,967
Claims priority, application Finland, Nov. 23, 1971, 3349/71; Aug. 24, 1972, 2354/72
Int. Cl. B65d *33/02, 85/62*
U.S. Cl. 206—424 **6 Claims**

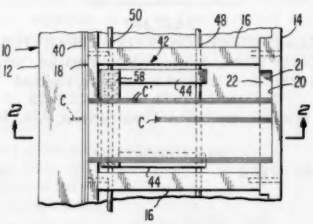


A reinforced package comprising a bag-like envelope having a reinforcing plate therein, wherein the goods are placed on one side of the plate between the envelope and the plate and the package together with its reinforcing plate and contents is folded at least double so that the contents are confined between walls formed by the reinforcing plate.

3,827,553
CARD SHIFT MECHANISM FOR RANDOM ACCESS FILING SYSTEMS

Laurence Allan Cross, Jr., Groveville, N.J., assignor to Randomatic Data Systems, Inc., Trenton, N.J.

Filed May 21, 1973, Ser. No. 362,273
Int. Cl. B07c
U.S. Cl. 209—80.5 **19 Claims**



Equipment is disclosed, in which a soft rubber feed pad underlies randomly filed code cards. In a manner already known to the art, selector slides are extendable into downwardly opening notches of the cards, so that cards whose notches conform to a selected code are free to move in a prescribed direction while the remaining, unwanted cards are restrained against such movement.

To separate the selected from the unwanted cards, the feed pad is given cyclical, rotational motion through a circular path. During a portion of each cycle of movement of the pad, it frictionally contacts the undersides of the cards, and as further travel of the feed pad through the same cycle occurs, the feed pad frictionally grips and moves the selected cards in a direction to off-set the same from those that have not been selected.

The number of revolutions of the feed pad per minute is governed by the number of cards which it underlies. Typically, movement of the feed pad is on the order of 1,300 – 2,000 r.p.m. This motion imparts incremental advancement to the selected cards to a fully off-set position in respect to the unwanted cards and has the unexpected and desirable result of shifting all the cards to an upright position to facilitate the final separation thereof, simultaneously with the card offsetting function.

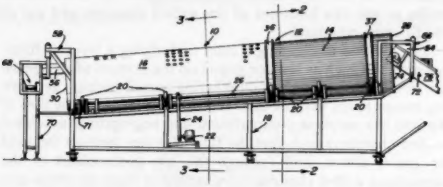
In alternative arrangements, an eccentrically rotating bar may be the member contacting the cards to discharge the card shifting function. Also, in commercial embodiments two feed pads, or eccentric bars, can be connected for joint operation.

3,827,554

BEAN SIZER AND BROKEN BEAN ELIMINATOR

Jimmy W. Richard, Homestead, Fla., assignor to Conveyor Line Products, Inc., Princeton, Fla.

Filed Dec. 29, 1972, Ser. No. 319,740
Int. Cl. B07b *1/00*
U.S. Cl. 209—95 **10 Claims**



A gravity separator having a cylinder formed by a first drum arranged for forming a stream of articles fed into the separator, and a second drum arranged for receiving articles from the first drum and separating out articles having a dimension less than a predetermined value for that dimension. The first drum is constructed from a plurality of longitudinally extending and longitudinally spaced members. These members and the gaps resulting from the spacing between them form an article sorter which permits undersized articles, such as pin beans, and foreign matter, such as sand, rock pebbles, and the like, to fall out of the drum. The longitudinal members advantageously have a V-shaped cross-section, with the apex of the V arranged directed into the drum. The second drum is provided with a plurality of internally opening, circumferential recesses arranged for receiving articles from the stream below a predetermined size for separating out undersized or broken articles. Each of the recesses has a wall which converges on itself as it extends away from an opening toward a bottom portion, and rounded edges arranged between the opening and wall and between the wall and bottom portion. An eliminator conveyor is arranged in the second drum for receiving articles discharged from the recesses by force of gravity when the recesses are elevated by rotation of the cylinder.

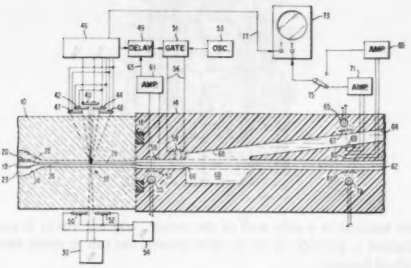
3,827,555

PARTICLE SORTER WITH SEGREGATION INDICATOR

Louis A. Kamentsky, Briarcliff Manor, and Isaac Klinger, Yorktown Heights, both of N.Y., assignors to Bio/Physics Systems, Inc., Mohapac, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,215
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.7 **13 Claims**

Small particles to be sorted are entrained in a stream of fluid and particle differences are detected to control a sorting means located downstream. The sorting means is effective to switch the particle carrying fluid to two different paths determined by the particle differences to thereby accomplish the



sort. A photoelectric particle detector is positioned to detect the passage of particles through one of said paths in order to verify that the sorting operation has occurred.

3,827,556

PURIFICATION OF KAOLIN CLAY BY FROTH FLOTATION

Miller B. Mallary, Macon, Ga., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Filed Nov. 6, 1972, Ser. No. 303,997
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 **5 Claims**

A method for removing finely divided particles of a colored titaniferous impurity from a dispersed alkaline pulp of kaolin clay by froth flotation. The collector for the impurities is a very low rosin acid tall oil which also provides controlled frothing without the addition of hydrocarbon oils to prevent overfrothing.

3,827,557

METHOD OF COPPER SULFIDE ORE FLOTATION

Elias Fischer, Wilmette, Ill., assignor to Stepan Chemical Company, Northfield, Ill.

Filed May 17, 1971, Ser. No. 144,231
Int. Cl. B03d *1/06*
U.S. Cl. 209—167 **4 Claims**

A novel flotation promoter used in the concentration of copper bearing ores for the efficient selective flotation of copper values, including chalcopyrite, with suppression of iron pyrites; the promoter comprising a sodium sulfate of an aliphatic hydrocarbon having a carbon chain in excess of 12 carbons and chemically combined with at least one mole of the C_2—C_3 alkylene oxides.

3,827,558

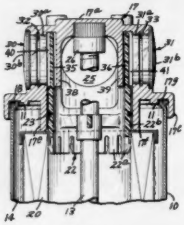
FLUID FILTER WITH BYPASS AND CONDITION INDICATOR

Robert L. Firth, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Nov. 9, 1972, Ser. No. 304,959
Int. Cl. B01d *35/14*
U.S. Cl. 210—90 **3 Claims**

A cylindrical filter housing having an open top end and a closed bottom end is provided. A cover member for the housing includes a coaxially positioned, cylindrical guide portion. A cylindrical filter element is yieldingly biased against the guide portion and a bypass member is attached to the top of the filter element for guided sliding movements in the guide portion. An inlet opening in the cover leads to the opening in the guide portion, and an outlet opening in the cover leads to

an annular chamber surrounding the filter element. An indicator tab on the bypass member extends upwardly behind a window located in a side wall of the cover, and the cover is constructed to provide an air pocket around the tab to resist entry of fluid therein.

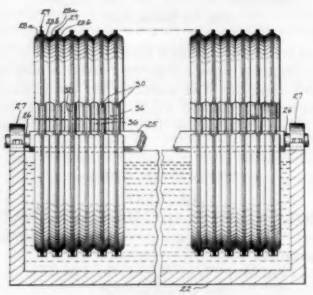


3,827,559

EXTENDED SURFACE ROTATING BIOLOGICAL CONTACTOR

Donald N. Gass, West Allis, and David G. Prosser, Mequon, both of Wis., assignors to Autotrol Corporation, Milwaukee, Wis.

Filed May 10, 1972, Ser. No. 252,038
Int. Cl. B01d *21/00*
U.S. Cl. 210—150 **29 Claims**



There is disclosed a rotating biological contactor formed of abutting thin wall sheets arrayed along a central hollow square shaft. The contactor takes several forms. In some forms, the sheets are identical vacuum formed sheets joined face-to-face and back-to-back to define a plurality of spaced radial passages open to the perimeter of the contactor and series of concentric passages extending between, and opening into, adjacent radial passages. The identical sheets may be continuous or built up from circular sectors. In other forms, alternate flat sheets and formed sheets are employed to define a similar arrangement of concentric and radial passages. In still another form, trapazoidal formed sections are employed with flat sheets to define a series of parallel, generally concentric passages and with the radial passages being defined by the space between the side edges of the trapazoidal sections.

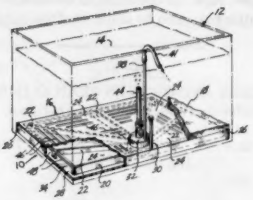
3,827,560

AQUARIUM FILTER

Michael S. J. Morton, 11860 14th South, Seattle, Wash. 98168

Filed June 21, 1971, Ser. No. 155,132
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **11 Claims**

A filter for placement on the bottom of an aquarium tank and adapted to underlie a layer of filtering material such as sand or gravel, including in one form, a plurality of walled chambers adjacent an aeration compartment, each of the chambers including a perforated top surface and the aeration compartment including an air inflow tube, an air and water outflow tube and ports communicating with each of the walled chambers. The aeration compartment additionally includes means for segregating the flow of water from an individual walled chamber through the aeration compartment and out the air and water outflow tube such that application of a partial vacuum to the outflow tube causes an increased flow of water through the filtering material above, and the top perforations of the individual walled chamber to flush settled mulm or the like both out of the walled chamber and out of the filtering materials.



The method of cleaning a filter underlying a layer of filtering material such as sand or gravel on the bottom of an aquarium, including the steps of connecting partial vacuum generating means to the aerator discharge tube, turning off the flow of air into the aeration compartment and segregating individual walled chambers such that the flow of water through the sand or gravel above, and through the top perforations of the segregated walled chamber is increased to flush the mulm into the aeration compartment and out the outflow tube thereof.

ERRATUM

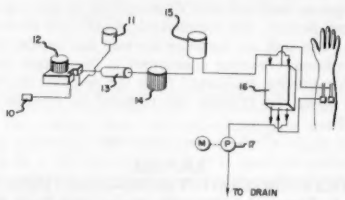
For Class 210—179 see:
Patent No. 3,827,985

3,827,561

DEAERATOR FOR DIALYSIS SYSTEM

Earl J. Serfass, Largo; Edward R. Lindsay, Jr., Clearwater; Gene Myron Holmes, Seminole; James D. Aid, and French Bishop, Jr., both of St. Petersburg, all of Fla., assignors to Milton Roy Company, St. Petersburg, Fla.

Filed Sept. 20, 1972, Ser. No. 290,638
Int. Cl. B01d *31/00*
U.S. Cl. 210—180 **10 Claims**



A blood dialysis system has a deaeration chamber with a cylindrical filter. Dialysis fluid passes from the outer surface to the inner bore of a cylindrical depth type filter thereby trapping air bubbles on the outer surface to deaerate the fluid. The inner bore of the cylindrical filter is connected to the outlet port of the chamber. A small diameter bleed hole between

the outlet port and the outer section of the chamber prevents excess air from building up around the outside of the filter. The outlet from the deaeration chamber is connected to the inlet of a constant head vessel. The inlet of the constant head vessel is connected to a vertical riser having an opening below the liquid level in the head vessel so that the fluid is discharged into the head vessel without unnecessary turbulence. The turbulence of the discharge of the water otherwise induces the entrainment of air in the solution rather than allowing it to liberate. In another embodiment the water is heated before being supplied to the inner bore of the cylindrical filter. In another embodiment an air permeable membrane is positioned across the top of the head vessel. In another embodiment a nozzle is included in the inlet to the deaeration chamber to subject the incoming fluid to subatmospheric pressure thereby increasing the size of the air bubbles making them easier to filter out of the fluid stream.

3,827,562

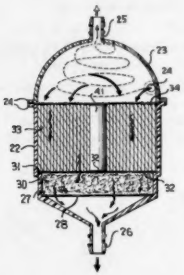
FILTERING DEVICE

William G. Esmond, 537 Stamford Rd., Baltimore, Md. 21229

Continuation-in-part of Ser. No. 231,691, March 3, 1972, Pat. No. 3,795,088. This application Dec. 6, 1972, Ser. No. 312,487

Int. Cl. B01d *31/00*

U.S. Cl. 210—304 **12 Claims**



This disclosure relates to a device for the removal of gases, particulate matter and oil primarily from blood after the treatment thereof in an artificial body device. The filter device utilizes a plurality of filter cloth layers disposed generally parallel to the path of blood flow and being supported in spaced relation and against collapse by a relatively coarse mesh arranged in layers and disposed between adjacent filter cloth layers. The device operates primarily on the principal of laminar flow of the blood through the filter cloth layers with the filter cloth being formed of a material having an affinity for the blood whereby gases or bubbles entrapped therein will be caused to be released.

3,827,563

SUPPORTING PLATES FOR THE MEMBRANES OF A DIALYZER, PARTICULARLY FOR HEMODIALYSIS

Christian Thorkild Boe, Farum, and Steen Gamwell Dawids, Klampenborg, both of Denmark, assignors to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen, Denmark

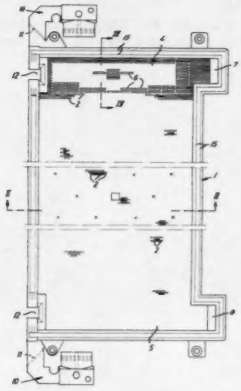
Filed July 12, 1971, Ser. No. 161,645

Claims priority, application Denmark, July 13, 1970, 3641/70

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **10 Claims**

For use in a dialyzer consisting of a stack of alternate pairs of membranes and supporting plates for these, a supporting plate is provided which has supporting projections arranged in a pattern such as to subdivide the path of flow from one end of the dialyzer to the other into a multitude of short longitudinal



sections each connected at both ends through transverse flow paths with adjacent longitudinal sections at both sides thereof.

3,827,564

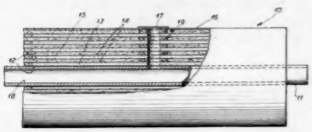
REVERSE OSMOSIS MEMBRANE MODULE

Stanley F. Rak, Mundelein, Ill., assignor to Culligan International Company, Northbrook, Ill.

Filed Jan. 12, 1973, Ser. No. 323,249

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **7 Claims**



A spiral-wound membrane module for separating a solvent from a solution such as water from an impure solution by means of a reverse osmosis process and a method for making such membrane module. An elongated sheet of semi-permeable membrane material has disposed in juxtaposition to its opposite surfaces, respectively, a sheet of porous product water spacer material and a sheet of a feed water spacer material to provide a three-ply membrane composite which is wrapped around a hollow tubular mandrel. The membrane composite wound around the tubular mandrel is disposed in an outer cover in which at least one opening is provided having its end sealed and extending through a radial axis of the spirally wound membrane composite and a wall of the tubular mandrel. Thus, the porous product water spacer material is in direct fluid communication with the tubular mandrel and the product water collected in the product water spacer material is required only to traverse a maximum of one-half revolution thereof to drain into the hollow tubular mandrel.

3,827,565

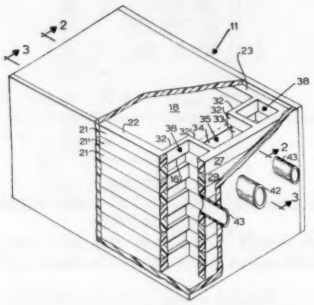
METHOD AND DEVICE OF ARTIFICIAL ENDOCRINE PANCREAS

Kenneth N. Matsumura, P.O. Box 1249, Berkeley, Calif. 94701

Division of Ser. No. 888,733, Dec. 29, 1969, Pat. No. 3,734,851. This application May 16, 1973, Ser. No. 360,981

Int. Cl. B01d *31/00, 13/00*

U.S. Cl. 210—22 **12 Claims**



A method for treating and changing the constitution of blood or other body fluid as the pancreatic islet cells effects such change normally in the blood or other body fluid passing therethrough in a live animal, in cooperation with or substitution for the animal endocrine pancreas; and a device for carrying out such treatment. The method comprises positioning on one side of a semi-permeable membrane and in contact therewith body fluid to be treated and the positioning on the opposite side of the membrane and proximate therewith once dispersed live pancreatic islet cells. The device comprises means associated with the membrane for positioning body fluid in contact with one side of the membrane, conduit means for introducing such fluid to and withdrawing it from the membrane, and once dispersed live pancreatic islet cells disposed on the other side of the membrane out of direct contact with the fluid. Additionally, the device may have a second membrane for dialyzing the fluid.

3,827,566

MULTI-LEVEL, PLEATED FILTER ARRAY

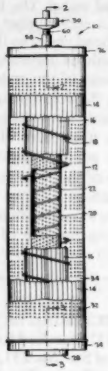
Carlos I. Garcia Ponce, Mexico City, Mexico

Continuation of Ser. No. 826,187, May 20, 1969, abandoned. This application Dec. 6, 1972, Ser. No. 312,648

Int. Cl. B01d *27/06*

U.S. Cl. 210—338 **5 Claims**

A multi-level, resin-impregnated, pleated, paper product filter assembly having spaced annular arrays of normally stable, pleats resiliently flexible circumferentially, a helical spring circumjacent between adjacent apices of the pleated arrays to resist collapse of paper product filters due to radial forces between adjacent filter levels and providing two-stage filtration in which the outer filter array comprises a filter pore size effecting first stage filtration of generally larger solids foreign matter, and the second or inner filter array provides second stage filtration of relatively finer foreign particles; in which perforated inner and outer cylindrical shells stabilize the filter cartridge or assembly in which the outer shell includes a plurality of spaced circumferentially disposed series of perforations to equalize pressure over the outer surface of the outer filter element; and in which an end cap and resilient



seal combine with the outer and inner shells to coaxially clamp and insure against short-circuiting of the liquid being filtered.

3,827,567

APPARATUS FOR TREATING MATERIAL SUSPENDED IN WATER

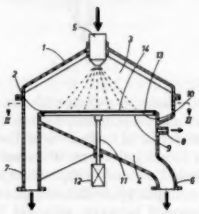
Lars-Goran Rundqvist, Tumba, Sweden, assignor to AB Celleco, Tumba, Sweden

Filed Mar. 21, 1973, Ser. No. 343,234

Claims priority, application Sweden, Mar. 29, 1972, 4066/72

Int. Cl. B01d *35/16*

U.S. Cl. 210—414 **5 Claims**



The apparatus comprises means for spraying a suspension upon one side of a strainer, and a device which at least in successive increments covers the other side of the strainer, thereby preventing clogging of the strainer.

3,827,568

FULL FLOW FLUID FILTER

Louis R. Toth, Montrose; Ray Hagler, Jr., Valencia, and Orville F. Keller, La Canada, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

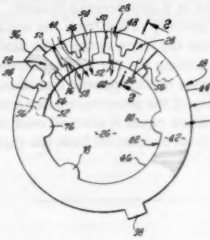
Filed Jan. 12, 1973, Ser. No. 323,279

Int. Cl. B01d *27/00, 25/18*

U.S. Cl. 210—448 **9 Claims**

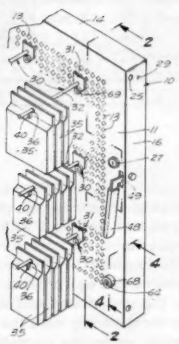
A filter for removing particulate impurities from a fluid comprising a hollow, generally cylindrical housing having axial fluid channels along the inner surface and open opposite ends forming an inlet and an outlet for the filter. A plurality of annular, generally disc-shaped filter elements are tightly stacked within the housing. Outer edges of the filter elements

bear on the inner surface of the housing and combine to form the axial fluid channels while inner edges of the filter elements combine to form a hollow inner core communicating with one of the open ends of the housing. Each filter element includes a plurality of radial channels between the axial channels and the



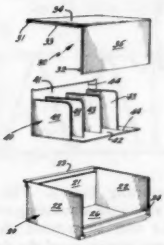
hollow inner core and each channel includes means defining a low-velocity pocket for trapping particulate impurities in a fluid flowing therealong. One end of the hollow inner core is blocked such that the path for fluid flowing between the inlet and outlet is through the axial and radial channels and the hollow inner core.

3,827,569
PEGBOARD DISPLAY RACK
Glenn R. Canning, 8318 Elmont St., Pico Rivera, Calif. 90660
Filed May 11, 1973, Ser. No. 359,470
Int. Cl. A47f *7/024*
U.S. Cl. 211—7 **9 Claims**



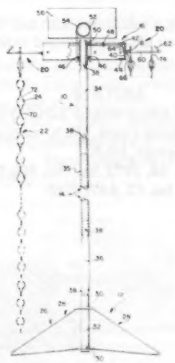
A display rack for carded merchandise includes a pegboard with a spring loaded plate mounted on the rear thereof. A plurality of card holding devices are attached at arbitrarily spaced locations on the pegboard. Each card holding device includes a tubular hanger on which the merchandise card are hung and an actuating rod slidably movable within the tubular hanger. A spring loaded extension portion on each rod withdraws it outwardly from the back of the pegboard and causes a retaining post pivotally supported on the forward end of the rod to project outwardly through a slot on the forward end of the tubular hanger to prevent removal of the merchandise cards. When the plate is pushed inwardly, all the rods are simultaneously depressed into their tubular hangers causing the retaining posts to be pivoted into the tubular hangers to thereby enable the removal of the merchandise cards.

3,827,570
PAPER TRAY
Paul J. Betts, Muskegon, Mich., assignor to Browne-Morse Company, Muskegon, Mich.
Division of Ser. No. 831,071, June 6, 1969, Pat. No. 3,612,637.
This application Apr. 15, 1971, Ser. No. 134,132
Int. Cl. B42f *17/12*; **B65d** *1/36*
U.S. Cl. 211—10 **4 Claims**



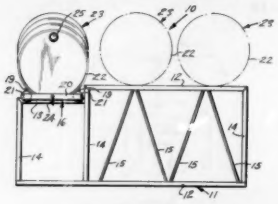
A filing tray for use in a file drawer, being removable therefrom, having ends, a side panel, a bottom, and having a detachable cover which can be placed thereon for storing purposes. A paper hopper for use in said tray, being removable therefrom, having a side, a bottom, partitions, and a breakaway line; said hopper capable of being oriented in said tray with its side against the side of said tray, with its side opposite the side of said tray or, with a portion thereof being broken off at said breakaway line, with its side generally parallel to the ends of said tray.

3,827,571
DISPLAY STAND FOR SUPPORTING PREHUNG ARTICLES
George H. Koutny, Chicago, Ill., assignor to Pace Promotions, Inc., Chicago, Ill.
Continuation of Ser. No. 196,956, Nov. 7, 1971, abandoned.
This application June 29, 1973, Ser. No. 375,183
Int. Cl. A47f *5/00*, *7/00*
U.S. Cl. 211—59 **2 Claims**



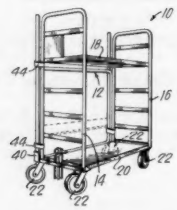
A display stand which includes a hanger unit to which a plurality of packaged articles are strung so that the hanger unit with the prehung packaged merchandise is packaged for shipment in a conventional carton, and when said hanger unit and prehung packaged articles is ready for display, the hanger unit with the prehung articles is removed from the carton and readily attached to the display stand.

3,827,572
WORKING BARREL RACK
Raymond C. Cockrum, 513 Ann Dr., Tecumseh, Okla. 74873
Filed June 1, 1972, Ser. No. 258,709
Int. Cl. A47f 1/16; A47g 29/00
U.S. Cl. 211—81 **1 Claim**



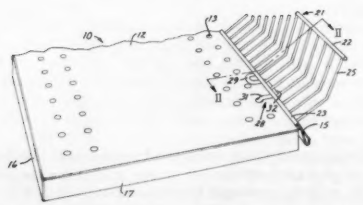
A device for supporting barrels. This device consists primarily of a frame structure consisting of a tiltable cradle which will enable the user to remove all of the contents therefrom and the frame structure of the device will support other barrels prior to their use.

3,827,573
FOLDING CART
Marcel Guerette, Irrebonne, Quebec, Canada, assignor to Matthew Moody Limited, Terrebonne, Quebec, Canada
Filed Nov. 1, 1972, Ser. No. 302,790
Claims priority, application Canada, Nov. 18, 1971, 128026
Int. Cl. B62b 1/100
U.S. Cl. 211—149 **6 Claims**



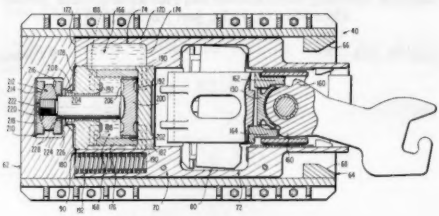
A folding cart having a side frame with end frames hinged to the side frame and a pair of shelves hinged to the side frame.

3,827,574
DEMOUNTABLE SHELF EDGE FENCE
Frank G. Craig, Sr., Battle Creek, Mich., assignor to Roblin Industries, Inc., Battlecreek, Mich.
Filed Oct. 24, 1972, Ser. No. 300,121
Int. Cl. A47f 5/10
U.S. Cl. 211—184 **10 Claims**



A demountable fence for a shelf having a plurality of holes therethrough comprises a fence panel and a plurality of clips fixed to and spaced along the bottom edge of the fence panel. The clips support the fence panel on the shelf and removably secure the fence panel to the shelf. Each clip includes a sinuously curved securement element extending from the fence panel in one direction along the shelf into one of the holes and terminating in an end portion disposed below the shelf for supporting the fence in a substantially upright but somewhat sloped orientation in a cantilevered manner. The clip further includes an ear laterally offset from the securement element and extending from the fence in the same direction and a connecting element joining the ear and securement element and offset from the fence in the opposite direction, the ear limiting the extent of entry of the securement element into the hole in the shelf as the fence panel is pivoted over and past the hole during installation on or removal from the shelf.

3,827,575
METHOD AND APPARATUS FOR PROVIDING COUPLING TRAIN ACTION AND ALIGNMENT CONTROL FOR RAILWAY VEHICLES
John E. Mosier, and Jack G. Stephenson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Jan. 30, 1973, Ser. No. 327,997
Int. Cl. B61g 9/16, 7/12
U.S. Cl. 213—8 **24 Claims**



A coupling, train action and alignment control apparatus generally for articulated vehicles and particularly for railway vehicles. The apparatus includes a sill structure directly connectable to an underframe of a railway vehicle including a first side wall for projecting normally downward with respect to the underframe, a second side wall projecting normally downward with respect to the underframe and extending in a spaced parallel posture coextensively with the first side wall, and a buff backstop means projecting normally downward from the underframe between and spanning the first and second side walls at a buff end thereof. Draft stop means are connected within the sill to the side walls at the draft end thereof. A coupling bar having a shank end is extended into the draft end of the sill. A mechanical cushioning and alignment assembly is positioned within the sill at the draft end and is pivotally connected to the shank end of the coupling bar for axially cushioning both buff and draft forces imparted thereto and generally axially aligning the central longitudinal axis of adjacent railway vehicles. A hydraulic cushioning assembly is positioned within the sill and is axially connected to the buff backstop and the mechanical cushioning and alignment assembly for cushioning in series with the mechanical cushioning assembly both buff and draft forces imparted by the coupling bar during coupling and run-in and run-out train action events and for permitting axial travel of the mechanical cushioning and alignment assembly to assist in alignment of the railway vehicles.

3,827,576

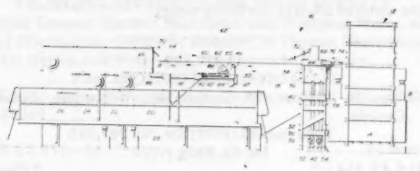
AUTOMATIC STACK FEEDER

Henry D. Ward, Jr., Royal Crest Rd., Rt. 1, Box 52K, Phoenix, Md. 21131; William F. Ward, Brick House Rd., R.D. 2, Box 271, Hampstead, Md. 21074, and Clyde E. Taber, III, Rt. 3, Mill Creek Rd., Fallston, Md. 21047

Continuation-in-part of Ser. No. 876,360, Nov. 13, 1969, abandoned. This application Nov. 23, 1971, Ser. No. 201,333

Int. Cl. B65h *3/04;* B65g *60/00*

U.S. Cl. 214—6 D 17 Claims



An automatic stack feeder arrangement is provided for delivering large corrugated paperboard sheets to a printer-slotter machine. A stack of the corrugated paperboard sheets is automatically raised to bring the topmost to a desired level where overhanging friction rolls thrust it into parallel friction belts. The conveyed corrugated paperboard sheet is deposited in a hopper on the feed table. The lower set of friction belts is adjustable in working length so as to provide a variable feed table hopper area. The upper set is hinged so that it can be raised away from the lower set.

3,827,577

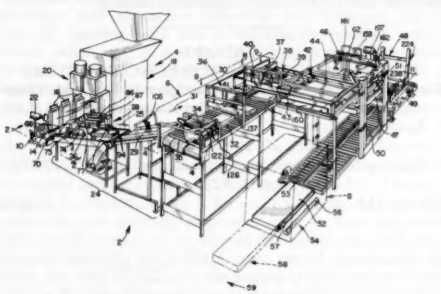
APPARATUS FOR ASSEMBLING LAYERS OF PACKAGES ON A PALLET

Kenneth G. Kurk, and Robert S. Kilbride, both of Quincy, Ill., assignors to Moorman Manufacturing Company, Quincy, Ill.

Division of Ser. No. 89,658, Nov. 16, 1970, Pat. No. 3,700,127. This application May 1, 1972, Ser. No. 249,419

Int. Cl. B65g *57/26*

U.S. Cl. 214—6 P 7 Claims



A method and apparatus for arranging bags in layers with the sewn end of each bag in each layer facing inwardly of the layer and for depositing each layer on a pallet. Some bags are turned 180° and some bags are turned 90° while the bags are being conveyed to a marshalling station where the bags are gathered sequentially in groups. The first two groups are sequentially moved onto a plate to form a layer of bags having a predetermined pattern. Then, the plate is moved over a pallet and the layer is wiped off the plate over the pallet while the plate is retracted. The next two groups are arranged in a layer having a different pattern and deposited over the pallet in like manner. These steps are repeated several times to quickly deposit eight layers on the pallet with adjacent layers having interlocking patterns. Preferably, 90° turning of a bag is accomplished by blocking movement of the bag on one side near one end while quickly moving a guide member along the other side of the bag toward the other end and then quickly retracting the guide member.

3,827,578

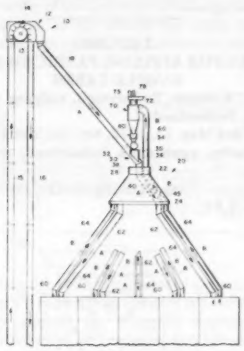
ROTARY GRAIN DISTRIBUTION SYSTEM

Richard Murray Hough, Sunfield, Mich. 48890

Filed Sept. 25, 1972, Ser. No. 291,772

Int. Cl. B65g *53/00*

U.S. Cl. 214—16 R 17 Claims



A rotary grain distribution system includes a distributor having a grain filling chute and an air exhausting chute rotatably positioned within a housing. The grain chute selectively couples a grain input chute to one of a plurality of grain distribution chutes extending from the bottom of the distributor to a plurality of grain storage bins located below the distributor in a ring. The exhausting chute selectively couples the intake of a cyclone precipitator to the one of a plurality of evacuation chutes extending from the bottom of the distributor to each storage bin for the bin being filled. Particulate material collected by the precipitator is returned to the grain input chute through a rotary dump valve such that a blower coupled to the precipitator can maintain negative pressure in the system to prevent discharge of dust and particulate material therefrom.

3,827,579

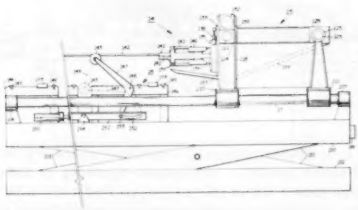
IRRADIATED FUEL PROCESSING SYSTEM

Wyvil R. Kendall, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Division of Ser. No. 715,602, March 25, 1968, Pat. No. 3,621,742. This application Nov. 2, 1970, Ser. No. 86,092

Int. Cl. B65g *59/02*

U.S. Cl. 214—8.5 C 9 Claims



A system for handling irradiated nuclear reactor fuel bundles preparatory to reprocessing the irradiated fuel contained

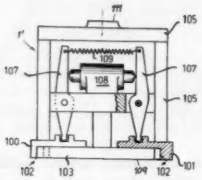
therein is disclosed. This system includes a fuel bundle clamping table including means to remove bundle end fittings and to clamp the bundle in a fixed position while permitting longitudinal movement of the fuel rods through the bundle; a fuel rod pulling assembly including means for pulling fuel rods from the bundle, for handling the rods and for collecting groups of rods; a shear feed assembly including means to feed groups of fuel rods incrementally to a shear; and a shear assembly including means to simultaneously cut two small pieces from the end of each rod of a set with each shearing stroke. A process for performing the above-indicated operations is also disclosed. This system is simple, reliable and capable of being remotely operated, disassembled and modified.

3,827,580

APPARATUS FOR AFFIXING FABRIC SWATCHES TO SAMPLE CARDS

Hans Rohner, Kuttigen, Switzerland, assignor to Polytex AG, Glattbrugg, Switzerland

Filed Mar. 13, 1972, Ser. No. 234,151
Claims priority, application Switzerland, Mar. 17, 1971, 3944/71
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 C **3 Claims**



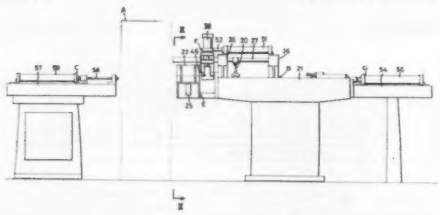
Swatches are picked up one-by-one from the top of a stack of swatches of the same size (usually of different color), folded over, and then applied to a paper strip and bonded thereto in the production of sample cards. The pickup is carried out by a pickup head having a pair of elements each carrying an array of pins whose points or tips project slightly (0.03–0.6mm) from the elements. These elements are brought down onto the top swatch, and the points are displaced outwardly to prick into this swatch. Then the pickup head is lifted, taking with it only the topmost swatch.

3,827,581

APPARATUS FOR SUPPLYING SHAFT LIKE MATERIALS

Takao Inui, Osaka, Japan, assignor to Kabushiki Kaisha Tange Tekkosho (Tange Industries, Ltd.), Osaka-fu, Japan

Filed July 20, 1973, Ser. No. 381,333
Int. Cl. B65h *51/26*
U.S. Cl. 214—1 PB **1 Claim**



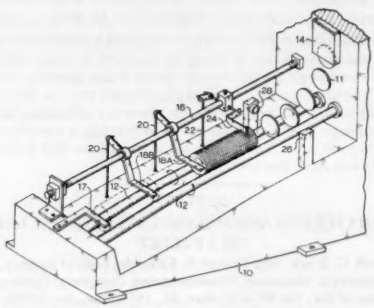
An automatic apparatus for supplying shaft-like materials to a processing machine having an insertion hole for the materials. The apparatus comprises an inclined table for queuing and supporting the materials thereon in parallel with the insertion hole of the processing machine, a lifting means provided at the lower end of the queuing table for lifting the materials one at a time, the lifting means serving also as a stopper for preventing the materials on the queuing table from dropping, a turnable chuck means for fetching the material on the lifting means, a driving means for turning the chuck means, and an insertion means for inserting the material held by the chuck means into the insertion hole of the processing machine. The chuck means is turnable from a first position in which the material is held by the chuck means coaxially with the insertion hole to a second position in which the chuck means locates just above the material lifted by the lifting means.

3,827,582

STACKING DEVICE

George H. Lederer, 75 Gordon Rd., Willowdale, Ontario, Canada

Filed Dec. 13, 1971, Ser. No. 207,393
Int. Cl. B65g *47/24*
U.S. Cl. 214—7 **7 Claims**



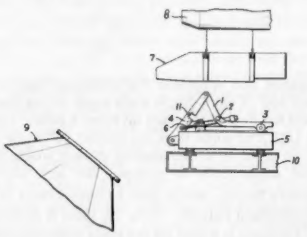
Flat round articles are separated into stacks of known length by being stacked to a greater length against a stop and being divided out to a lesser length from the stop.

3,827,583

SCRAP CHARGING MACHINE FOR CONVERTERS

Bernhard Enkner, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Dec. 29, 1972, Ser. No. 319,524
Claims priority, application Austria, Jan. 11, 1972, 179/72
Int. Cl. F27b *3/18*
U.S. Cl. 214—18 SC **1 Claim**



A scrap charging machine for converters is provided with which the ideal movements of crane charging are imitated and which is adaptable to local conditions. It comprises on a bogie chutes and chute carriers, and a crank mechanism for lifting

and tilting the chutes. The chute carriers include a fork-shaped part which receives the chute and is movable on wheels on the bogie so as to form a chute carrier vehicle, and tilting levers hinged to the fork-shaped part and the bogie. The machine further comprises push rods hinged to the bogie and the tilting levers, and a stop between the fork-shaped part and the tilting levers. Upon actuation of the push rods the chute carrier vehicle is moved in a straight line in horizontal direction until the stop is reached, whereupon it is lifted into charging position and tilted.

3,827,584

CHARGING APPARATUS FOR SHAFT FURNACE

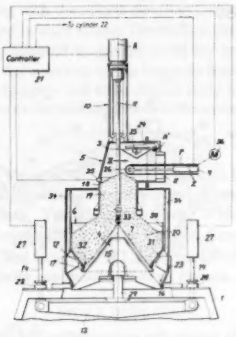
Rudolf Grewer; Herbert Hickmann, and Wolfgang Welke, all of Oberhausen, Germany, assignors to Thyssen Niederrhein AG Hutten-und Welzwerke, Oberhaussen, Germany

Filed Jan. 16, 1973, Ser. No. 324,132

Claims priority, application Germany, Jan. 20, 1972, 2220264

Int. Cl. F27b *11/12*

U.S. Cl. 214—36 **7 Claims**



A housing on top of a shaft-type furnace, e.g. for the direct reduction of iron ore with a reducing gas preferably consisting in major part of carbon monoxide and hydrogen, has a laterally opening inlet and a downwardly opening outlet. Green pellets, e.g. of iron ore, are charged into the housing through the inlet and pass with a minimum free fall into a bucket which is lowered linearly in the housing as a pile of pellets is formed in the bucket so that the top of the pile remains substantially at the same level, adjacent the discharge end of the loading device. Once the bucket has been displaced linearly downwardly to its lowermost position, the pellet feed is stopped and the input is blocked by a pivotal bell. The bottom of the bucket, which is formed by another linearly displaceable but pivotally suspended bell, is then displaced downwardly away from the sides of the bucket and a bell temporarily blocking the outlet is also moved downwardly to allow the mass of pellets in the bucket to spill out and down into the furnace. The bells thus form alternately effective inlet and outlet gates sealing the head of the furnace against the escape of gas.

3,827,585

METHOD AND APPARATUS FOR LOADING BAGGED MAIL FROM A LOADING DOCK INTO A HIGHWAY VEHICLE

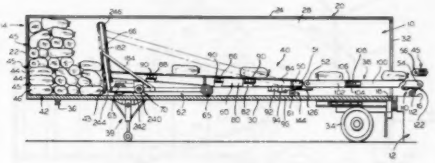
Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill. 60025

Continuation-in-part of Ser. No. 152,585, June 14, 1971, abandoned. This application July 27, 1972, Ser. No. 275,792

Int. Cl. B65g *67/08*

U.S. Cl. 214—41 **17 Claims**

The invention relates to the loading of mail bags from a loading dock into an end loading highway vehicle to fully and completely load the vehicle, in one form of which a pair of tandem connected conveyors are mounted on the loading dock for running under existing mail bag handling conveyors, that are proportioned lengthwise, and are mounted to be moved into the vehicle for loading purposes, to extend between the existing conveyor where there is one, and if not, the loading dock, and the desired unloading point of the bags within the vehicle. The bags are moved single file down the conveyors, with the leading conveyor end being upwardly and laterally movable relative to a baffle member connected thereto that extends transversely of vehicle. The conveyors accelerate the bags up to propelling speed whereby they are propelled forwardly of the conveyor discharge end and against the vehicle end wall to fall behind the baffle member which serves to dam the bags against any substantial rebound.



In another form the tandem connected conveyors are in sections carried by a wheeled frame, which is provided with a forward conveyor section for swinging movement about a horizontal axis adjacent its rearward end for elevational distribution of the mail bags, and that carries a high speed bag propelling belt conveyor equipped with a bag damming baffle member of a roll up type. Associated with the wheeled frame is a second conveyor section having its forward end approximating the elevation of the rearward end of the first conveyor section, and having its rearward end at an elevation for convenient manual loading of mail bags thereon. The second conveyor section includes a belt conveyor operating at a lower speed for conveying mail bags received thereon to the high speed propelling conveyor. Both conveyor sections have dimensions transversely thereof that substantially span the transverse dimension of the vehicle loading area.

3,827,586

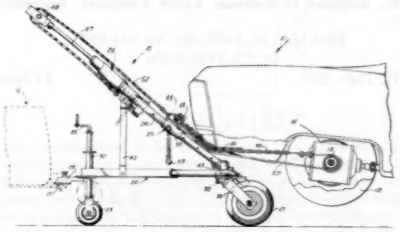
VEHICLE TOWING AND JACKING DEVICE

Russell R. Lambert, Sr., Trenton, Tex., assignor to Warren K. Boney, Dallas, Tex., a part interest

Filed Mar. 15, 1971, Ser. No. 124,104

Int. Cl. B60p *3/12*

U.S. Cl. 214—86 A **13 Claims**



For towing a disabled vehicle with another vehicle such as a pickup truck or passenger automobile, a towing device is in the form of a two wheel trailer coupled to the towing vehicle through a conventional ball and socket hitch with the trailer including a hydraulic jack for lifting one end of the disabled vehicle from the pavement. The trailer includes a forwardly inclined track, a carriage raised and lowered on the track by means of the hydraulic jack, and belt and chain coupling as-

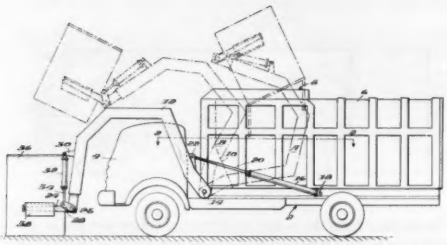
semblies for securing one end of the disabled vehicle to the carriage. The trailer includes a third wheel which can be lowered to operative position for use of the trailer as a self contained jacking device in a service area.

3,827,587

AUTOMATIC SELF-LEVELING FORKS

Harvey W. Liberman; Samuel E. Harvey, and Steven C. Voorhees, all of Knoxville, Tenn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 31, 1969, Ser. No. 846,569
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **23 Claims**



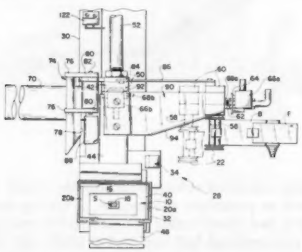
Apparatus for automatically leveling the forks of vertically moveable hoist arms. In a typical embodiment, the arms are used on refuse collection vehicles for lifting and dumping detachable containers into the body of the vehicle. The arms are pivotally mounted at one end on the vehicle and the opposite ends of the arms has fork devices for engaging brackets on opposite end walls of the detachable containers. Swinging movement of the arms and of the forks is accomplished by means of hydraulic cylinders or rams. A hydraulic pump supplies fluid under pressure to the arm cylinders for raising the arms. A portion of the fluid is conducted to the fork cylinder by means of a gear or vane type flow divider, so that the rate of extension of the piston in each fork cylinder is at a predetermined ratio of the displacement of the arm piston. This causes the forks to swing downwardly at a predetermined rate while the arms are being raised toward a dumping position, thereby maintaining the container approximately horizontal until it is in a position to be inverted for dumping.

3,827,588

FILM CARTRIDGE OPENER

Oliver W. Gnage, and John J. Enfonde, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1973, Ser. No. 342,007
Int. Cl. B65g *65/04*
U.S. Cl. 214—305 **8 Claims**



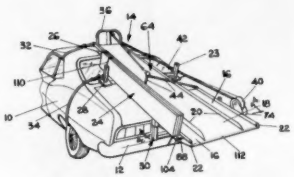
Apparatus for opening frangible film cartridges and capturing the spool of exposed film housed therein so that the film can be readily removed from the spool. A frangible film cartridge is removed from a cartridge hopper and driven past a knife edge to slit the cartridge housing adjacent the film spool as the cartridge is being positioned such that the film spool contained therein is captured on a support post. The post is then actuated to pull the film spool from the slit cartridge and present the spool to a manual film stripping station while the cartridge housing is discarded. After the film is stripped from the spool, the support post is returned to its initial position for receiving a new film spool, the empty spool being automatically discarded.

3,827,589

CARRIER APPARATUS FOR MOTOR VEHICLES

Warren R. Townsend, Jr., 1200 96th Ave., Zeeland, Mich. 49464

Filed Oct. 19, 1971, Ser. No. 190,482
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **9 Claims**



A snowmobile carrier for automobiles, the carrier having a support deck including a central trackway and a pair of lateral trackways disposed on either side of the central trackway for receiving and supporting the runners of a snowmobile. The support deck is pivotably mounted at the lower end to the bumper of the auto. Central support means are secured to a central portion of the support deck and extend downwardly to rest between the rear window and trunk of the auto. The support deck is releasably secured through straps and the like at its upper end to the automobile to prevent shifting of the carrier on the auto. A special folding ramp is supported in folded position at the side of the support deck and engages the bottom portion of the support deck in unfolded position for loading and unloading of the snowmobile. The pivotable mounting means between the bottom of the support deck and the bumper includes an annular receiving ring secured to the bumper and a pair of unequal length pins engaging the rings for ease in loading of the carrier onto the auto. Further, the central support means for the carrier is adjustable vertically to adapt the carrier to cars of different shapes.

3,827,590

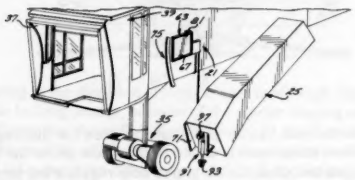
BAGGAGE LOADER

Carl L. Lodjic, Long Beach, Calif., assignor to Global Erectors, Inc., Long Beach, Calif.

Filed June 8, 1973, Ser. No. 368,194
Int. Cl. B64d *9/00*
U.S. Cl. 214—505 **11 Claims**

Baggage loader apparatus mounted on the side of an elevated passenger walk-way, such as an airplane loading

ramp, for receiving baggage from an access doorway in such loading ramp and depositing at ground level. The baggage loader includes an elongated closed ended chute extending alongside the walk-way, one extremity thereof being formed with a baggage receiving compartment having a side opening facing the walk-way for registration with the access doorway. Mounting means pivotally mounts the extremity of the chute opposite the one extremity from the walk-way and raising



means is provided for selectively raising and lowering the free end of such chute whereby the chute may be raised to register its side opening with the access doorway for receipt of luggage to be deposited in such chute. Thereafter, the free end of the chute may be lowered to ground level for access thereto by baggage men for removal of the baggage from the side opening and such baggage will slide downwardly toward such side opening as pieces thereof are removed from such chute.

3,827,591

TAMPER PROOF SECONDARY CLOSURE DEVICE

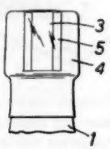
Dennis Gerald Spelman, Bromley Kent, England, and David Thomas Jones, Ystalyfera, Swansea, Wales, assignors to Viscose Development Company Limited, Croydon, England

Filed Oct. 18, 1971, Ser. No. 189,914

Claims priority, application Great Britain, Oct. 19, 1970, 49493/70

Int. Cl. B65d *41/24*

U.S. Cl. 215—38 A **25 Claims**



A tamper-proof secondary closure device and a method of applying said device to the neck of a bottle. The method comprises the steps of applying a layer of sensitive material to the neck of the nottle and then shrinking a secondary closure thereover, the arrangement being such that the sensitive material is visibly affected by the process of applying a solvent or softening agent to the secondary closure and subsequently attempting to remove it from the neck of the bottle.

3,827,592

CHILDPROOF CONTAINER CLOSURE

Werner Deussen, Taunusstrasse 3-7, 6229 Walluf/Rheingau, Germany

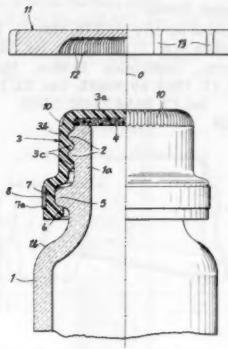
Filed Sept. 25, 1972, Ser. No. 292,125

Claims priority, application Germany, Mar. 22, 1972, 2213887

Int. Cl. A61j *1/00*

U.S. Cl. 215—9 **13 Claims**

The neck of a container, such as a medicine bottle, has a bead gripped from below by an annular lip of an elastic closure member which is slipped around that neck from above. A cover for the open top of the neck is integral with that member



or threaded into same and can be removed only with the aid of a special key engaging the cover under slight downward pressure from above.

3,827,593

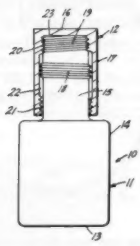
CONTAINER SAFETY CLOSURE

Kenneth D. Kramb, Portage, and Walter J. Isabell, Kalamazoo, both of Mich., assignors to K.I.C. Incorporated, Portage, Mich.

Filed Mar. 16, 1973, Ser. No. 342,274

Int. Cl. B65d *55/02*

U.S. Cl. 215—9 **10 Claims**



In combination, a safety container and cap assembly, the container having an elongated neck with at least two sets of threads of opposite pitch with respect to each other, one arranged proximally and one arranged distally with respect to the container, the cap having at least two sets of threads of opposite pitch with respect to each other, one arranged proximally and one arranged distally with respect to the cap complementary to and engageable with the respective sets of threads of the container, the set of threads proximal to the container having a greater diameter than that of the set of threads distal to the container, thereby permitting the distal threads of the cap to clear the distal threads of said container, the sets of threads of the container and the cap being sufficiently spaced apart so that only one set of complementary threads are engageable at one time.

3,827,594

A TWIST-OFF CROWN CLOSURE WITH SEAL

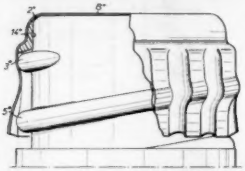
Antoine Joseph Leenaards, Lausanne, Switzerland, assignor to Societe Du Bouchon Couronne (Crown Cork Company France), Essonne, France

Continuation of Ser. No. 39,270, May 21, 1970. This application Mar. 31, 1972, Ser. No. 240,305

Claims priority, application France, May 21, 1969, 69.16460; Sept. 11, 1969, 69.30888; Dec. 23, 1969, 69.44549

Int. Cl. B65d *23/00, 53/00*

U.S. Cl. 215—324 **32 Claims**



A closure member for a container, particularly a bottle, has a top portion and a skirt portion connected by an inclined connecting zone whose height, measured in the direction of the axis of the closure member, is preferably equal to at least one twelfth of the diameter of the skirt portion. The extent of the inclined connecting zone permits sealing means to be accurately positioned within the closure member whereby the degree of sealing and the ease of removal of the closure can be controlled.

3,827,595

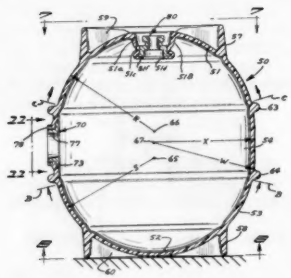
BEER KEG

Richard W. Reynolds, Burnsville, Minn., assignor to Huck Finn, Inc., Spring Lake, Minn.

Continuation-in-part of Ser. No. 58,341, July 27, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,306

Int. Cl. B65d *1/20*

U.S. Cl. 220—1 R **6 Claims**



A beer keg having the top, bottom and side walls made of plastic, and tapper and filler plug mounting members made of plastic or metal which in one embodiment are cast in position as the top and side walls are formed. In the second embodiment the filler plug is retained in the central part of the keg as the keg is molded and thereafter mounted in a filler opening formed in the barrel.

3,827,596

COOKWARE COVER RELEASE VALVE

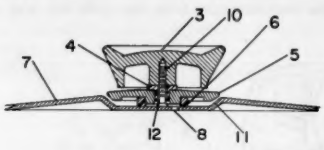
Robert E. Powers, Jr., Columbia, S.C., assignor to Carolina China, Inc., Columbia, S.C.

Filed Apr. 28, 1972, Ser. No. 248,540

Int. Cl. B65d *51/16;* **F16k** *31/44*

U.S. Cl. 220—44 R **10 Claims**

A cookware cover release valve is provided in a cover for a cookware utensil. The cover has a centered recessed well and an air inlet opening therein with a gasket encompassing the opening. A plate element with an opening in its center rests on top of the gasket. A bushing in turn is mounted on the plate. The gasket, the plate and the bushing are all centered about a screw in the well. An air gap exists between the bushing and screw. A turnable knob is mated to the screw above the bushing to open and close the air gap to help regulate the pressure therein.



3,827,597

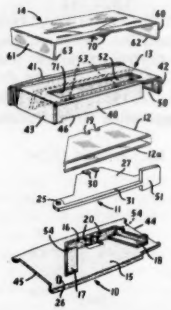
BLADE DISPENSER

Paul A. Braginetz, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,206

Int. Cl. B65h *1/08*

U.S. Cl. 221—232 **7 Claims**



A combined container and dispenser for bare blades comprising a base member, a cover member, a blade ejector movable into and outwardly from the cover member, and a plate of elastic sheet metal engaged over the cover and interlocked under the base member holding the parts in assembled relation, the plate having spring pressure fingers integral therewith projecting through an opening in the cover member applying a spring pressure to the top of the contained stack of blades.

3,827,598

DISPENSERS FOR DISPENSING BOWED OPEN SPRING RETAINING RINGS PROVIDED WITH LOCKING PRONGS

Hans Erdmann, Maplewood, N.J., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.

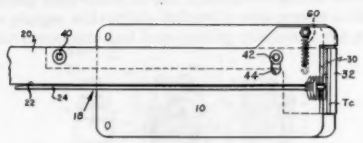
Filed Sept. 21, 1973, Ser. No. 399,490

Int. Cl. B65g *59/06*

U.S. Cl. 221—312 **8 Claims**

A dispenser of the swinging magazine-rail type according to U.S. Pat. No. 2,900,107, for dispensing bowed "open" spring-metal retaining rings having locking prongs projecting from the convex side or face thereof, as are known in the art and sold under the registered trademark "Prong-lock," and which is characterized by its ability to accept for dispensing a supply of such rings arranged in stack or column formation but

disposed in relatively turned-over or upside-down relation, as results in their convex sides facing and their locking prongs



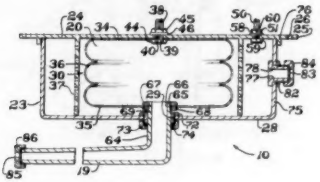
pointing in the direction of ring-column feed. Such disposition of the locking prongs, because of the unique shaping and edge configuration thereof, is favorable to an applicator or assembly tool by which the dispenser is "operated" (which tool may take the form either of a hand-push applicator tool according to U.S. Pat. No. 2,835,028 or of a plier-type ring gripping and assembly tool according to that disclosed and claimed in applicant's co-pending U.S. Pat. application Ser. No. 292,100, filed Sept. 25, 1972), upon gripping the endmost ring of the ring column then in the "dispense ready" position, also applying a lateral push force on the one or two of the rings of the column next above the so-gripped endmost ring, which force is transmitted by said one or two of the so-pushed rings to the magazine rail, thereby imparting limited swinging motion to said rail which is utilized in separating and freeing said endmost ring from the rings of the column above same for relatively easy withdrawal from said dispenser.

3,827,599

PLURAL CONTAINER PRESSURE DIFFERENTIAL SYSTEM

Vijay Rastogi, Troy, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 21, 1972, Ser. No. 264,841
Int. Cl. B65d *5/54*
U.S. Cl. 222—52 **11 Claims**



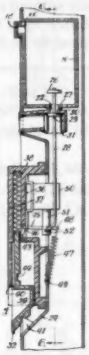
A fluid pressure actuated system in which an inner contractile container is disposed within an outer container and has a spout extending outside the outer container with a pressure actuated closure in the spout for permitting the ejection of fluid from the inner container when the pressure differential between the inner and outer containers reaches a predetermined amount and the inner container is contracted. A valve in the wall of the outer container releases pressure from the outer container when the pressure inside the outer container exceeds the pressure outside by a predetermined amount which could occur when a space shuttle type vehicle leaves the earth's atmosphere and enters the vacuum of outer space. The system is thereafter triggered to react to an increase in outside pressure which occurs when the space shuttle type vehicle re-enters the atmosphere.

3,827,600

APPARATUS FOR DISPENSING A LIQUID AND ANOTHER MATERIAL

Donald E. Janke, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 216,652, Jan. 10, 1972, abandoned.
This application June 20, 1973, Ser. No. 372,465
Int. Cl. B08b *13/00*
U.S. Cl. 222—70 **8 Claims**



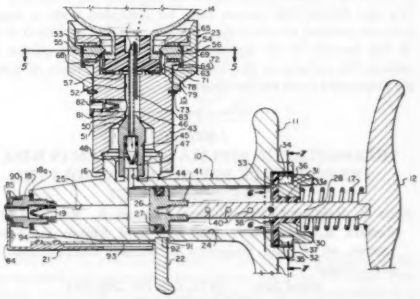
An apparatus for dispensing liquid and another material, such as a particulate detergent material, at different times in an operating cycle of an apparatus such as a dishwasher. The liquid may comprise a rinse aid dispensed by the apparatus subsequent to a washing cycle, such as during the last rinse cycle of the dishwasher operation. A single solenoid operator is associated with each of the dispensing means for coordinated operation thereof. The control measures a preselected quantity of the liquid for delivery thereof from a storage tank in the apparatus.

3,827,601

HAND POWERED LIQUID DISPENSER OF THE METERING TYPE

Joseph M. Magrath, P.O. Box 148, McCook, Nebr. 69001, and Leonard L. Hierath, Denver, Colo., assignors to Said Magrath, by said Hierath

Filed Mar. 23, 1973, Ser. No. 344,415
Int. Cl. B67b *7/24*
U.S. Cl. 222—83 **14 Claims**



A hand powered liquid syringe or metering dispenser particularly for use in the veterinary medicine field comprises a pump mounted in a body having a transverse handle on grip.

Standard bottles or other containers for vaccines or medicines may be mounted on a fitting secured to the body to supply the pump through a piercing tube or needle secured in the fitting. Air is supplied through the fitting to replace liquid removed from the bottle and the needle and air inlet are positioned in a manner to prevent air from being discharged from the bottle with the liquid. The pump is actuated by a squeezing action on a plunger when a handle is pressed toward the pistol grip. Check valves are provided in the inlet and outlet passages of the pump. Cannulas or other liquid discharge elements may be removed from the dispenser without requiring handling by the operator; this is accomplished by a trigger mechanism actuated by the operator's hand while he is holding the pistol grip.

3,827,602

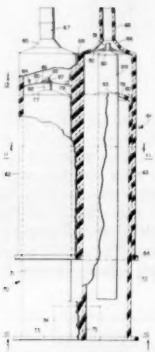
DUAL TUBULAR DISPENSING DEVICE

Augustus H. Nicholls, 1170 Longfellow Dr., Manhattan Beach, Calif. 90266

Continuation of Ser. No. 84,059, Oct. 26, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,854

Int. Cl. B67d *5/52*

U.S. Cl. 222—137 **5 Claims**



A dispensing device including a duality of barrels attached together, each receiving a piston, the pistons being attached together exteriorly of the barrels for simultaneous and equal movement in ejecting material from nozzles at the ends of the barrels, each piston having a sealing means which may be a wedge-shaped forwardly projecting annular lip, the barrels including spaced grooves or ridges in their circumferential walls to interrupt the seals and allow air to bleed out when the barrels are filled. One piston may be provided with a stop to prevent reverse movement. An insert may be included in one of the barrels to fit through an opening in the piston and reduce the volume in the barrel to change the ratio of materials dispensed from the two barrels.

3,827,603

THERMOPLASTIC APPLICATOR SYSTEM IN WHICH THE PUMP BACK-PRESSURE CONTROLS THE DISPENSING OUTLET

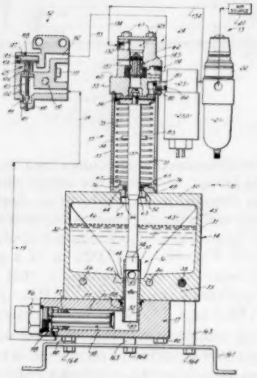
Alan B. Reighard, Bay Village; Samuel R. Rosen, Lorain; Ronald R. Schroeder, Amherst, and Simon Z. Tamny, Lorain, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed June 1, 1972, Ser. No. 258,891

Int. Cl. B67d *5/60*

U.S. Cl. 222—146 HE **30 Claims**

An applicator system for melting thermoplastic material and supplying the molten or liquid material under pressure and at a controlled temperature to an applicator head or gun. The material is heated in a reservoir from which it is pumped to the applicator gun by a single-acting, sleeve-type piston pump. The pump is driven by a single-acting reciprocating air motor. There is an interlock valve associated with the air



motor for controlling opening and closing of a valve of the gun. This interlock valve insures that the gun valve is never opened and molten material is never dispersed from the gun except when the molten material pressure is at a predetermined operating level.

3,827,604

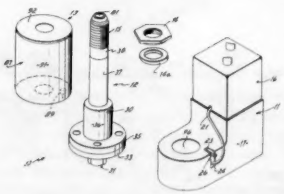
MODULAR SOLENOID-OPERATED DISPENSER

William M. Hamilton, Lorain; Alan B. Reighard, Bay Village, and Simon Z. Tamny, Lorain, all of Ohio, assignors to Nordson Corporation, Amhurst, Ohio

Filed Sept. 11, 1972, Ser. No. 287,645

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 HE **13 Claims**



A solenoid-operated dispenser for dispensing liquid materials. The dispenser comprises a heated service module which contains static parts, a gun module which contains all of the movable parts of the dispenser, and a plug-in solenoid coil module, all three modules of which are resiliently held in an assembled relationship by a single threaded nut.

3,827,605

LOCKING MEANS FOR LIQUID DISPENSERS

Michael Gene Knickerbocker, Long Beach, Calif., assignor to Diamond International Corporation, New York, N.Y.

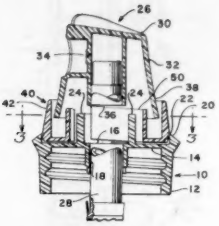
Filed May 7, 1973, Ser. No. 357,542

Int. Cl. B67d *5/32*

U.S. Cl. 222—153 **13 Claims**

The dispenser such as a liquid dispensing pump has its pump plunger guided for axial operative movement through a container closure member and through a locking member

mounted on the closure member for rotary movement about a fixed axis coincident with the axis of the plunger tube. A locking tongue affixed to the locking member has a free end projecting transversely to and adjacent the axis of movement of the plunger and radially deflectible with respect to the axis for movement into and from locking position in the path of



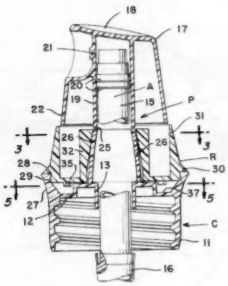
operative movement of a stop shoulder carried by the plunger so as selectively either to immobilize the plunger or to permit unimpeded operation thereof, while cam means fixed to the closure cap governs the radial position of the free end of the locking tongue in accordance with the rotational position of the locking member.

3,827,606

PUMP IMMOBILIZING MEANS

Michael Gene Knickerbocker, Long Beach, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed June 27, 1973, Ser. No. 374,102
Int. Cl. B67d *5/40*
U.S. Cl. 222—384 **8 Claims**



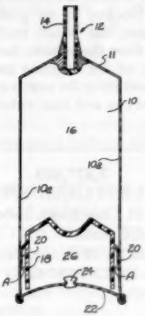
A liquid dispensing pump has its pump plunger guided for axial operative movement through a container closure cap and through a rotary control member mounted on the cosure cap for angular control movement about a fixed axis coincident with the longitudinal axis of the plunger. A locking finger projecting upwardly from the closure cap has a radially deflectible free end portion which is normally displaced from the path of reciprocation of a downwardly directed locking shoulder carried by the plunger, but is resiliently deflectible into such path for axial locking abutment with such shoulder to immobilize the plunger. Cam means carried by the control member is operative in a first position of the member to deflect the free end of the finger into locking relation with the said plunger and is operative in a second rotary position of the control member to permit retraction of the free end of the finger to a normal unstressed position displaced from the path of reciprocation of the locking shoulder.

3,827,607

PRESSURE OPERATED CONTAINER FOR DISPENSING VISCOUS PRODUCTS

Robert S. Schultz, Old Greenwich, Conn., assignor to Eyelet Speciality Company, Wallingford, Conn.

Continuation-in-part of Ser. No. 290,977, Aug. 26, 1971, abandoned. This application Sept. 21, 1972, Ser. No. 290,977
Int. Cl. B65d *83/14*
U.S. Cl. 222—389 **30 Claims**



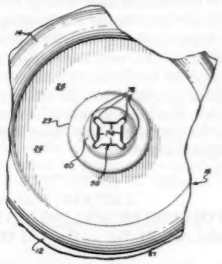
The invention contemplates a pressurized container for viscous foods or other viscous products in which the body of the piston has a substantially smaller diameter than the diameter of the container. The outer periphery of the piston is provided with a resilient flange member that maintains a light sealing pressure on the interior surfaces of the container, allowing the piston to move smoothly upwardly within the container. Also, the dispensing valve and adjacent container contours are such as to achieve economies in piston construction and to provide precision control of valve action.

3,827,608

MOUNTING COVER FOR PRESSURIZED FLUID CANISTER

Edward H. Green, 11 Army Trail Rd., Addison, Ill. 60101

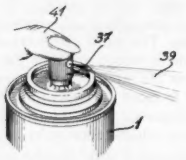
Continuation of Ser. No. 54,872, July 15, 1970, abandoned. This application Jan. 12, 1973, Ser. No. 322,920
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.16 **15 Claims**



A structure for enabling gassing of an aerosol package while its sprayhead is in operative association with the package. The package comprises a canister having a valve assembly and sprayhead combination, the assembly being of the type in which the sprayhead has an integral stem that enters an opening in the cover member of the valve assembly or being of the type known as a stem valve in which there is a permanently connected stem which protrudes through the opening of the

cover member. In the latter type, the sprayhead is a button which fits onto the protruding end of the stem. In both cases, the valve is operated by pressing the sprayhead down, which carries the stem inwardly of the cover member and raises a valve seat off a gasket that is crimped into the cover member, beneath the crown of a boss formed in the cover member. The means which enables the gassing with the sprayhead in place comprises making the opening in the crown of the boss formed in the cover member noncircular, but having a plurality of points around the periphery of the opening which supports the stem in its sliding movement, the opening having lateral lobes which are normally blocked by the gasket to enable normal operation of the valve, but which enable propellant to be forced into the valve from the outside thereof while the stem is in place. This action of the entering gas under pressure invaginates the valve, and since the seat is at the same time lifted off the gasket, the gas can and does enter into the body of the canister.

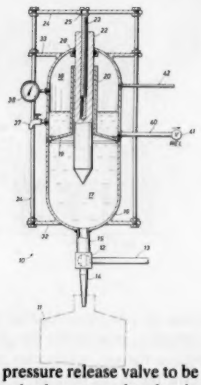
3,827,609
VALVE FOR LIQUID SPRAYER
Amabili Arnaldo, 2101 Champlain, Suite 416, Montreal 133, Province de Quebec, Canada
Filed June 18, 1973, Ser. No. 371.113
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.24 **12 Claims**



The present invention relates to a valve for a pressurized fluid spraying container wherein the spraying container includes at the top thereof a small circular opening having a rim about the opening and a seal disposed inside the container against the rim. The valve comprises a housing open at the top and disposed inside the container with the upper edge pressing against the seal to make sure that the seal is tight between the rim and the housing. In addition, the valve comprises a plunger which is mounted to slide through the opening and the seal, with the lower part inside the housing. The plunger is formed at the lower part thereof with a resilient member of any shape which is unitary with the plunger and is adapted to enable the plunger to be just slightly depressed and to spring back to its original position when the plunger has ceased to be slightly depressed. The valve should of course be arranged for permitting the fluid spray to escape from the container as the plunger is being depressed.

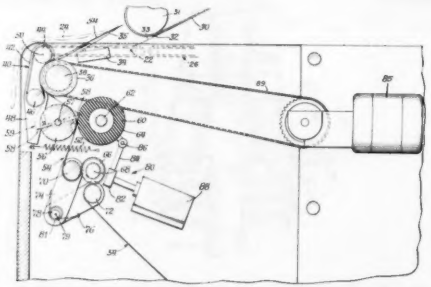
3,827,610
VOLUMETRIC FILLING DEVICE
Harold A. Stiefel, Jr., Rt. No. 1, Box 202 Q, Cleveland, Tex. 77327
Filed Aug. 9, 1972, Ser. No. 278,988
Int. Cl. G01f *11/44*
U.S. Cl. 222—440 **9 Claims**

A volumetric filling device which utilizes a pair of connected chambers is selectively filled through a threeway valve with a product. The volume of the lower chamber is adjusted by vertically manipulating a displacement plug in a standpipe extending into the upper chamber. The standpipe extends into the second or upper chamber so that an overflow from the standpipe falls into the bottom portion of the upper chamber. The chamber is pressurized upon the introduction of a product with pressure in the chamber being regulated. If excessive product is introduced, it flows from the bottom chamber through the standpipe into the upper chamber and is



returned through a pressure release valve to be recycled. Once a particular pressure in the upper chamber is obtained, air is forced into the upper chamber to evacuate the standpipe and lower chamber through the three-way valve and an outlet to thereby meter a precise quantity of liquid.

3,827,611
FOLDER WITH PAPER INSERTING MEANS
Frederick W. Grantham, Santa Monica, and Gordon L. Fleming, Malibu, both of Calif., assignors to Frederick W. Grantham, Santa Monica, Calif.
Filed Nov. 30, 1972, Ser. No. 310,840
Int. Cl. A41h *33/00*
U.S. Cl. 223—37 **12 Claims**

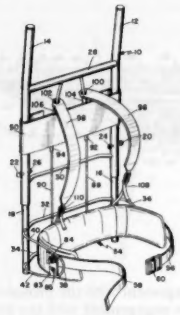


A folder for folding articles of clothing, e.g., shirts, shorts, etc. with means for inserting a paper element or card in each article; the device includes means for introducing the paper or card at the entrance of the folder, with the article as it is introduced, and folding the article around the paper.

3,827,612
ADJUSTABLE FIT PACK FRAME
Mitchell F. Mead, 4898 Mt. Helix Dr., and Ralph A. Drollinger, 9722 Primrose, both of LaMesa, Calif. 92041
Filed Sept. 25, 1972, Ser. No. 292,151
Int. Cl. A45f *3/10*
U.S. Cl. 224—25 A **7 Claims**

A pack frame that is adjustable in length to position the shoulder bar, upper back band, and side arms of the device in

the appropriate spaced relationship to fit a particular user. The length adjustment includes telescoping tubes for the main side rails and the central structural rods of the device. Adjustment is also provided for the space between the side arms and



the angle of the side arms. Finally, adjustment is provided in the load transfer point for the upper portions of the shoulder straps. The shoulder straps are free to move at their upper point, to seek the proper position. The shoulder straps are secured to the central rod by oversized grommets.

3,827,613

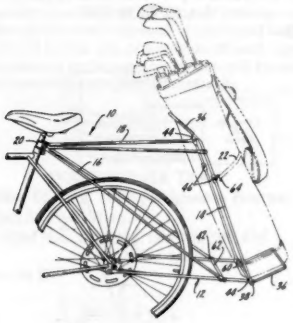
GOLF BAG BICYCLE RACK

Marvin C. Meyer, 450 Norman Ct., Des Plaines, Ill. 60016

Filed Nov. 9, 1972, Ser. No. 305,117

Int. Cl. B62j *11/00*

U.S. Cl. 224—40 **8 Claims**



A bicycle rack for carrying and supporting a golf bag containing clubs that is easily attachable and detachable while also being simply constructed.

3,827,614

PACKAGING CARRIER

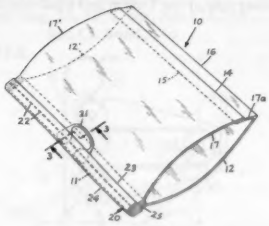
Robert O. Baxter, Camden, Ark.; Carl A. Byars, Kansas City, Mo.; Richard J. Nadaskay, Freehold, N.J., and Lamar R. Roark, Camden, Ark., assignors to International Paper Company, New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,429

Int. Cl. A45c *3/00*

U.S. Cl. 224—45 H **6 Claims**

Disclosed herein is a single wall, tubular packaging carrier constructed of a flexible material such as paper. The tubular packaging carrier is open at both transverse ends and is provided with a carrying handle disposed adjacent to a longitu-



dinal edge and affixed thereto by sewing. At least three plies of flexible material are associated with the aforesaid longitudinal edge.

3,827,615

KNITTING MACHINE SELECTOR JACK BUTT REMOVAL APPARATUS

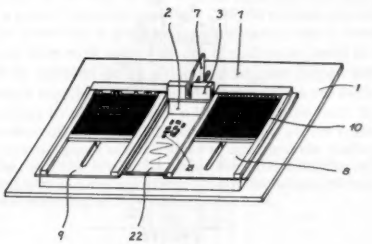
Falk Kuhn, and Friedrich Rombach, both of Rottenburg, Germany, assignors to Fouquet-Werke Frauz & Planck, Rottenburg am Neckar, Germany

Filed July 24, 1973, Ser. No. 382,119

Claims priority, application Germany, July 29, 1972, 2237392

Int. Cl. B26f *3/00*; G06k *1/00*

U.S. Cl. 225—103 **9 Claims**



To selectively remove selector butts on selector jacks and provide a program on the jacks, in accordance with a pattern, a pattern reading means provides control signals which are decoded, synchronized with mechanical transport of the jacks in front of a hammer. The hammer is mechanically moved to a cocked position at which it can strike a butt, striking movement of the hammer being permitted, or inhibited, in accordance with the read information from the pattern, by means of an electrically operated latch, and, when movement is permitted, opening of the latch to thereafter permit striking movement of the hammer by previously stored force, for example a spring, to effect striking of selected butts in accordance with the pattern.

3,827,616

WEB FEEDING APPARATUS

Cyril John Atkinson, Royston, England, assignor to International Computers, Limited, London, England

Filed Mar. 12, 1973, Ser. No. 340,248

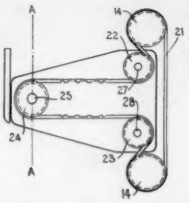
Claims priority, application Great Britain, Mar. 14, 1972, 11804/72

Int. Cl. G03b *1/30*

U.S. Cl. 226—74 **2 Claims**

Web feeding apparatus comprising two pairs of web drive tractors, each pair drivable from a different one of two shafts,

and an endless flexible belt by which the shafts are driven, the belt having a generally T-shape to engage the shafts at ends of the T-head and a drive wheel in the base of the T with a pair of idlers on either side of the T-stem and head junctions, in which



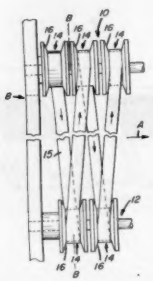
the pair of idlers are moveable together in a curve transversely of the T-stem in the plane of the T. Such arcuate movement of the idlers with the drive wheel locked causes rephasing of the drive shafts and thus of the driven web.

3,827,617

HELICAL WEB PATH PROCESSING DEVICE UTILIZING FORCE COUNTER-ACTING SPOOLS

Robert I. Anderson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,205
Int. Cl. B65h *17/42*
U.S. Cl. 226—118 **6 Claims**



A helical web or film path processing device utilizing force counteracting spools for generating a force on the film to counteract the normal tracking force on the film generated by the film approaching a spool non-perpendicular to the spool axis. The tracking force tends to cause the film to climb the spool flanges, twist, fold over and in some situations to be damaged. The force counteracting spool has a tapered or frustum-shaped hub in which the hub end of smallest diameter is adjacent the trailing flange of the spool in the lateral direction of film movement.

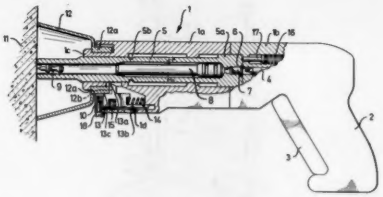
3,827,618

RATCHET ARRANGEMENT FOR AN EXPLOSION DRIVEN SETTING GUN

Helmut Oesterle, Nofels; Fritz Mark, Mader, and Peter Jochum, Meiningen, all of Austria, assignors to Hilti Aktiengesellschaft, Fuerstentism, Liechtenstein

Filed June 4, 1973, Ser. No. 366,579
Claims priority, application Germany, June 7, 1972, 2227774
Int. Cl. B25c *1/14*
U.S. Cl. 227—8 **7 Claims**

In an explosion driven setting gun using a detachable protective cap on the forward end of the gun housing, the cap is secured against rotation by a radially displaceable ratchet mounted in the housing. The ratchet is also axially displaceable so that it can be removed from locking engagement with the trailing end of the protective cap. Two springs act on the ratchet, one biasing it radially inwardly and the other biasing it



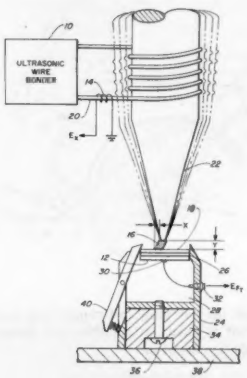
axially into engagement with the protective cap. For releasing the ratchet from engagement with the protective cap, the gun housing has an opening aligned opposite the ratchet so that a member can be inserted through the opening into a notch in the ratchet for displacing it axially against the axial spring biasing action.

3,827,619

ULTRASONIC BOND MONITOR

John H. Cusick, Santa Rosa; Alvin E. Brown, Redwood; Al S. Hamamoto, San Jose, and Jack L. S. Bellin, Palo Alto, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1973, Ser. No. 325,272
Int. Cl. B23k *5/20*
U.S. Cl. 228—1 **8 Claims**

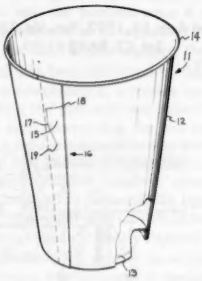


A system and method for monitoring the bond strength of ultrasonic bonds. A measure of bond quality is obtained non-destructively, by developing a voltage which is proportional to the amplitude of the traverse motion of the ultrasonic bonding tool, and also developing, by means of a transducer, a second voltage proportional to the tangential component of the forces applied during bonding. The voltages are fed into a logic circuit to derive their ratio, which is a measure of the bonding quality.

3,827,620
NON-REUSABLE NESTABLE CUP OR CONTAINER

Rodney E. Ludder, 19 Hamilton Sq., Glen Head, N.Y. 11545

Filed Nov. 17, 1972, Ser. No. 307,452
Int. Cl. B65d 3/06, 3/28
U.S. Cl. 229—1.5 B 4 Claims

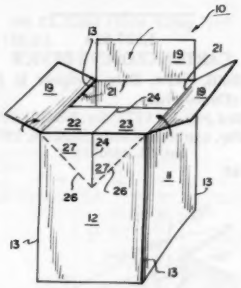


A nestable two-piece cup or container the sidewall portion of which is formed from a double-ended, crescent-shaped blank of paperboard or other sheet-like material by rolling it into a frusto-conical configuration with the edges of the blank over-lapping one another in face to face contact and being glued to one another to form a side seam of double thickness, one of the edges of the blank being scored or perforated or otherwise deformed to form a tab which is manually removable from, or foldable out of, face to face contact with the other edge of the blank by the user of the cup to give a visible indication that the cup has been used and to thereby discourage the vendor from attempting to refill a previously used cup. The first user of the cup may be motivated to so deform the cup by placing a number, symbol or other graphic message on the underside of the tab or on the sidewall of the blank in the region normally covered by the tab, of a portion of such cups, and by advising the users of such cups that prizes will be awarded to those whose cups bear such graphic message.

3,827,622
EASY PACKING DEEP CONTAINER

Robert D. McCloud, Burlington, N.C., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 23, 1971, Ser. No. 173,795
Int. Cl. B65d 5/16
U.S. Cl. 229—37 R 3 Claims

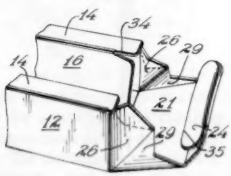


An easy packing deep container is made from a cut and scored blank of paperboard or the like and comprises opposed pairs of main panels connected along lines of fold to define a tube, together with closure flaps extending from one end of the main panel and foldable to position to define an end closure for the tube. Second closure flaps extending from the opposite edges of the main panel are foldably connected thereto, one of the second closure panels being slit midway thereof perpendicular to the line of fold with its adjacent main panel to define a pair of minor closure flaps. The slit extends into the same main panel for a predetermined distance, and a score line extends from each side of the slit in such main panel to a corner of the panel to define a pair of triangular shaped subpanels, which together with the minor closure flaps are foldable to position to provide easy loading of the tube from the open side thereof. The triangular shaped subpanels are foldable back into the plane of such panel to complete the loading of the tube, and the minor flaps are thereafter foldable into overlapping and secured relationship with the second closure flaps after completing of the loading of the tube.

3,827,621
DOUBLE WALL TRAY

Robert A. Bliss, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Nov. 24, 1972, Ser. No. 309,435
Int. Cl. B65d 5/22
U.S. Cl. 229—34 HW 5 Claims

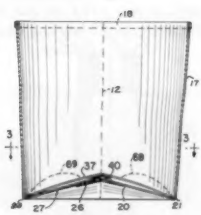


A double walled tray includes parallel double sidewalls including outer sidewalls and spaced inner liner walls connected by top flanges. End walls are connected to the outer sidewalls by pairs of gusset flaps. A top flap and a reversely turned locking flap hold the gusset flaps against the end walls.

3,827,623
COLLAPSIBLE CONTAINER

Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Apr. 10, 1972, Ser. No. 242,623
Int. Cl. B65d 5/10, 3/04
U.S. Cl. 229—39 R 10 Claims



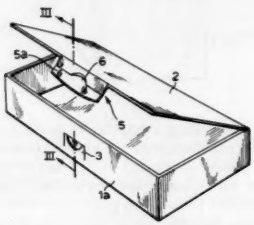
A collapsible container formed from a cut and scored blank of paperboard or similar foldable sheet material which, when set up, provides a tubular body having an open top with a circular cross section and a bottom wall structure which comprises panels integrally hinged along straight lines to the bot-

tom edge of the tubular body, which panels are connected in pairs and are automatically foldable inwardly between the body side wall forming panels when the latter are collapsed and which, when the container is opened up, have interlocking portions adapted to hold the bottom wall panels in an upwardly directed cone-shaped formation, thereby providing a support for the container contents which has a degree of resiliency.

3,827,624
CARTON CLOSURE DEVICE

Amilcare Dogliotti, Neive, Italy, assignor to P. Ferrero C. S.p.A., Alba (Cuneo), Italy

Filed July 12, 1972, Ser. No. 271,105
Claims priority, application Italy, Sept. 24, 1971, 53562/71
Int. Cl. B65d *5/66*
U.S. Cl. 229—45 **1 Claim**

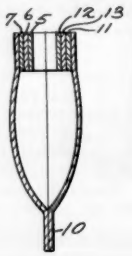


The invention relates to a closure arrangement for cartons having hinged lids, such as cartons for confectionary and the like. The closure arrangement comprises a flap on the edge of the lid parallel to the hinge. The flap is scored to form a hinge along a line parallel to the attachment edge of the lid and incised to form a tongue which projects towards the lid from that part of the flap on the side of the scored hinge remote from the lid. The body of the carton is formed with an incision in an inverted U-shape which forms a tongue the end of which has a substantially semi-circular recess. The tongue on the flap of the lid can thus be readily engaged through the recess at the end of the tongue on the carton to form a cooperating engagement to hold the lid in the closed position. The tongue on the carton base flexes to hold the tongue on the lid in position.

3,827,625
RECLOSABLE PACKAGE AND CONTROLLED RELEASE PAPER FOR USE THEREIN

Harmon B. Miller, Atlanta, Ga., assignor to Reclosable Package Corp., Atlanta, Ga.

Filed June 21, 1972, Ser. No. 264,878
Int. Cl. B65d *33/16*
U.S. Cl. 229—62 **12 Claims**

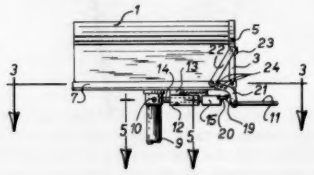


An improved reclosable package having a closure in which a pressure sensitive adhesive is adhered to a release sheet. The adhesion is improved by using a release sheet partly coated with a release coating in areas interspersed with uncoated areas, the uncoated areas adhereing more strongly to the pressure sensitive adhesive than the coated areas.

3,827,626
RURAL MAILBOX

Henri Daigle, County of l'Islet, Saint Pamphile, Quebec, Canada

Filed Aug. 14, 1972, Ser. No. 280,498
Int. Cl. B65d *91/00*
U.S. Cl. 232—17 **5 Claims**

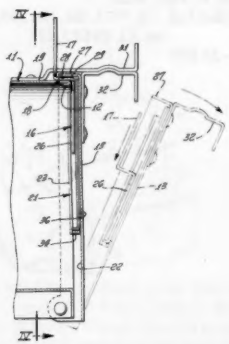


A mailbox arranged to be made conspicuous of the presence or absence of mail therein, and provided with a pivoting and blocking mechanism and with a door-actuating mechanism, both arranged into an integrated actuating assembly operated by a single handle. The latter extends horizontally to be easily accessible and operable by a mailman through an open side window of the vehicle used for mail delivery. A plunger is arranged to block the mailbox into either of at least two angular positions arranged 90° apart around an upright pivot axis and linkages connect the handle to the plunger and to the door to simultaneously actuate the same.

3,827,627
SIGNALING DEVICE FOR RURAL MAILBOX

John H. Clement, 340 Wanaao Rd., Kailua, Hawaii 96734

Filed Aug. 21, 1972, Ser. No. 282,424
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **2 Claims**



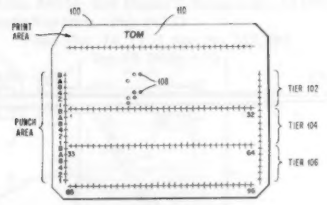
A signaling device is disclosed for attachment to a mailbox of the type having an access opening and closure or door therefor movable from a vertical closed position to a generally

horizontal open position, in which the device includes a signal member adapted to be supported in an exposed exterior position relative to the box with the mailbox closure in its closed position. Another part of the device is adapted for attachment to the inside surface of the box closure and is coupled to the signal member such that when the closure is opened the signal member is released from its supported position so as to fall downwardly by gravity adjacent the access opening of the box. Upon subsequent closing of the mailbox door, the signal member is carried into the mailbox were it remains hidden from view until repositioned in its supported exposed orientation exteriorly of the box. In this manner, the device signals the owner that mail has been delivered by disappearing from its exposed exterior orientation to a hidden location inside the box thereby avoiding the conventional raised flag announcement to would be mail thieves that the box contains mail. In one embodiment, a holder is adapted to be attached to the inside surface of the box closure for slidably receiving a lower portion of the signal member which is arranged to extend downwardly into the mailbox adjacent the inside closure surface when shut. Opening of the closure releases the signal member from its supported exteriorly exposed position, causing it to slide downwardly by gravity to a retracted position relatively to the closure whereupon it is carried thereby to its hidden position interiorly of the box upon shutting the closure.

3,827,628
PNEUMATICALLY CONTROLLED DOCUMENT CARD PUNCH

Karel Den Tex, Rochester, Minn.; Donald F. Jensen, Endicott, N.Y.; Merlin J. Ricklefs, Rochester, Minn.; Fred Saltz, Binghamton, N.Y.; Jon J. Schmidt, Stewartville, and Phillip S. Stacy, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 17, 1972, Ser. No. 272,507
Int. Cl. 234 *64;* **G06k** *1/16*
U.S. Cl. 234—18 **14 Claims**

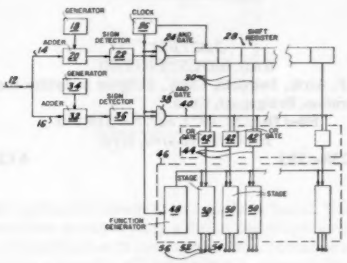


A key operated punch for document cards which utilizes pneumatic logic for controlling the punching, reading and printing of document cards as they pass through the transport of the machine. The document cards include three tiers of punched information, and the machine automatically duplicates the punched information in the second tier of a card passing through a read station in the machine into the second tier of a card then in a punch station of the machine. The third tier of the card in the read station includes program data which, according to the punchings in this tier, indicate an end of field, a skip command, a dup command, or an ALPHA shift command effective for data being entered into the first tier of a card in the punch station.

3,827,629
DEVICE FOR ESTIMATING THE VALUE OF THE AMBIGUITY FUNCTION

Jacques Max, Saint-Egreve, and Wlodzimierz Kofman, Ville Neuve, Grenoble, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Feb. 16, 1973, Ser. No. 332,802
Claims priority, application France, Feb. 24, 1972, 72.06301
Int. Cl. G06f *15/34;* **G06g** *7/19*
U.S. Cl. 235—150.53 **2 Claims**



The value of the ambiguity function defined by:

$$A(r, f)=\int_{-\infty}^{\infty} X(t)Y(t-r)e^{-2\pi ift}dt$$

is estimated by means of a method and a device designated as an "ambiguity meter" which are of primary interest in the field of signal analysis and processing.

The approximate value adopted for $A(r,f)$ is equal to:

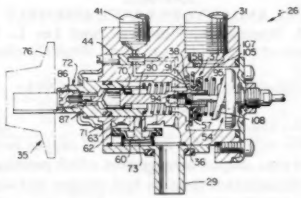
$$\int_{-T}^{T} \operatorname{sgn} Z_1(t) \operatorname{sgn} Z_2(t-r)e^{-2\pi ift}dt$$

where sgn $Z_1(t)$ is the sign of $X(t)+B_1(t)$ and sgn $Z_2(t)$ is the sign of $Y(t)+B_2(t)$; and $B_1(t)$ and $B_2(t)$ are two random signals produced by generators. The functions $X(t)$ and $Y(t)$ are applied to the two inputs of the ambiguity meter. The signs Z_1 and Z_2 are detected, then sampled by AND-gates. sgn $Z_2(t-r)$ is stored in a shift register and integration is performed in the stages of a Fourier transformation circuit.

3,827,630
FUEL CONTROL DEVICE

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 18, 1973, Ser. No. 380,212
Int. Cl. G05d *23/12;* **F16k** *1/00*
U.S. Cl. 236—99 **6 Claims**



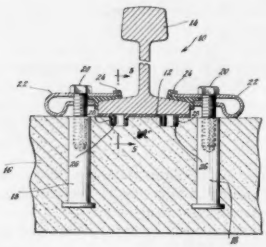
A control device having a housing provided with a valve seat and a movable valve member carried by the housing for

opening and closing the valve seat. A thermostatically operated device is operatively associated with the valve member for moving the valve member relative to the valve seat. A spring is carried by the housing and is operatively associated with the valve member to tend to move the valve member to close the valve seat, the spring being so constructed and arranged that the spring causes the valve member to substantially always tilt against the same part of the valve seat when the valve member is being moved to open or close the valve seat.

3,827,631
RAIL MOUNTING PAD

Edward F. Kirik, Fairfield, Conn., assignor to Syntex Rubber Corporation, Bridgeport, Conn.

Filed Dec. 29, 1972, Ser. No. 319,865
Int. Cl. E01b *9/40, 9/14*
U.S. Cl. 238—283 **6 Claims**



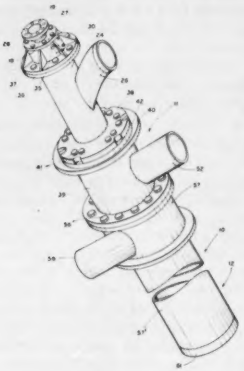
A pad for use in a rail mounting assembly to dampen the rail vibration while providing electrical insulation between a rail and a tie, particularly where positive retention of the pad against lateral slippage is accomplished independently of the means used to secure the rail to the tie. Retention against lateral slippage is provided by disposing embossments on the pad which mate into socket recesses in the tie. Wear, permanent set, and cracking are alleviated by disposing apertures through the embossments to interrupt the lateral propagation of the strain wave caused by compressive stress imposed on the rail mounting assembly from rolling train wheels. Dampening of rail vibration is supplemented by cooperatively configuring the embossments and the socket recesses to develop desired spring forces upon compression of the pad.

3,827,632
FUEL AND OXYGEN LANCE ASSEMBLY

Nicholas M. Rymarchyk, Pittsburgh, and Leo L. Meinert, Baden, both of Pa., assignors to Berry Metal Company, Harmony, Pa.

Filed Sept. 13, 1973, Ser. No. 396,911
Int. Cl. B05b *15/00*
U.S. Cl. 239—132.3 **10 Claims**

A lance for oxygen or for a mixture of oxygen and fuel includes a five pipe adapter arrangement which permits some to be readily disassembled from its fuel, oxygen and water coolant sources in order to test the same for leaks or other malfunctions. The assembly also includes a central fuel pipe which is surrounded by an insulating pipe with the said pipes including upper sleeve elements of piston type design which are so assembled as to prevent the intermixture of fuel, oxygen, and water during the presence of leaks. The insulating

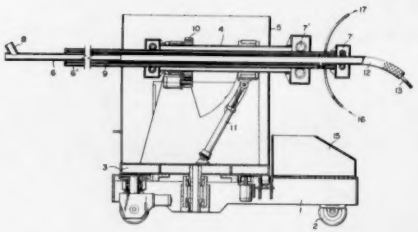


pipe also provides an insulating space which can be easily pressure tested in order to determine the sealing integrity of the assembly.

3,827,633
MOBILE DEVICE FOR REPAIRING FURNACE WALLS AND THE LIKE

Hiroshi Kouno, and Sueki Kubo, both of Kitakyushu, Japan, assignors to Kurosaki Yogyo Co., Ltd., Kitakyushu-shi, Japan

Filed Aug. 21, 1973, Ser. No. 390,235
Claims priority, application Japan, Aug. 25, 1972, 47-85056; May 21, 1973, 48-56563
Int. Cl. B05b *3/18*
U.S. Cl. 239—132.3 **20 Claims**



A mobile device for repairing furnace walls includes a mobile unit on which telescopically disposed conduit means are mounted. A nozzle is mounted on the conduit means such that refractory material fed through the conduit means is discharged from the nozzle for deposit on the furnace walls. Supporting means are provided for supporting the conduit means on the mobile unit and for controlling the location and position of the nozzle whereby the conduit means may be operated from a remote position to control the location and direction of discharge of refractory material from the nozzle and provide for depositing the refractory material on the furnace wall with a minimum of waste.

3,827,634

CLEANING DEVICE

Paul Hammelmann, Zum Sundern 17,474, Oelde/Westfalen, Germany

Filed Mar. 8, 1973, Ser. No. 339,104
Claims priority, application Germany, May 4, 1972, 2221781
Int. Cl. B05b *3/04, 13/06, 15/10*
U.S. Cl. 239—227 12 Claims

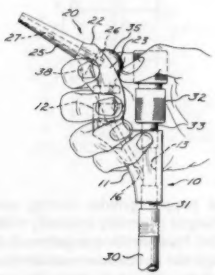
A cleaning device for the interior of tanks, silos and the like has a foldable and spreadable framework carrying spray heads. The framework can be folded to permit insertion through an opening, and can then be spread in the interior of the receptacle. The interior framework can be rotated about a longitudinal axis, and each of the spray heads can in itself be rotated with reference to the framework.

3,827,635

AIR HOSE ADAPTER

Anthony J. Krakowski, 4026 East Pleasant Valley Rd., Seven Hills, Ohio 44131, and Daniel S. Krakowski, 10178 Albion Rd., North Royalton, Ohio 44133

Filed Mar. 16, 1973, Ser. No. 341,884
Int. Cl. B05b *1/12*
U.S. Cl. 239—391 13 Claims



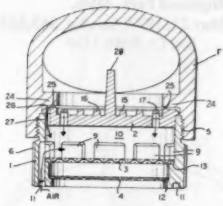
There is disclosed herein an air hose adapter having an air tire chuck, an air blower nozzle movable into engagement with the chuck for blowing a stream of air, and a quick change coupling for attaching other air powered tools.

3,827,636

SUBSTANTIALLY LEAKLESS AERATOR

Richard G. Parkison, Somerville, and Barry S. Fichter, Dunellen, both of N.J., assignors to American Standard Inc., New York, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,982
Int. Cl. E03c *1/08*
U.S. Cl. 239—428.5 20 Claims



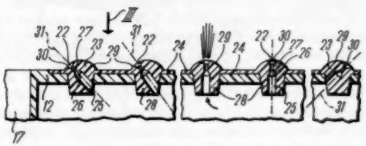
This application covers an aerator for a faucet. The aerator includes four principal parts: a disk or diaphragm having a plurality of apertures at its upstream end for converting incoming water into a plurality of jets of water; a substantially cylindrical body having an upper shoulder to support the diaphragm and having apertures to admit air to be mixed with the water jets produced by the diaphragm; and a pair of spaced screens of different dimensions downstream of the diaphragm for additionally mixing and emitting the air and water combination. The incoming air and the water jets developed by the diaphragm are combined and mixed in the space or chamber above the two screens before being discharged through the discharge outlet of the aerator. The diaphragm embodies a so-called "crush ring" positioned peripherally at its upstream end. The crush-ring contacts a flat ring near the end of the faucet spout and, because it is "crushed" or distorted to overcome and absorb irregularities in the end of the spout, it forms a primary obstruction to prevent leakage through the narrow spaces formed by the threaded segments that hold the aerator against the faucet spout. The body also provides additional spaces along its periphery to aspirate water that may be otherwise leaked out of the above-noted threaded portions of the structure and hence such water will be emitted from the downstream discharge end of the aerator, thereby avoiding leakage from the device.

3,827,637

SPRINKLER SYSTEMS

Christian Stephany, Erbach; Heinz Braunmiller, Weidenstetten, and Johannes Katzer, Neu-Ulm, all of Germany, assignors to Kupex AG, Glarus, Switzerland

Filed Mar. 21, 1973, Ser. No. 343,294
Claims priority, application Germany, Sept. 30, 1972, 2248065
Int. Cl. B05b *3/16*
U.S. Cl. 239—242 15 Claims



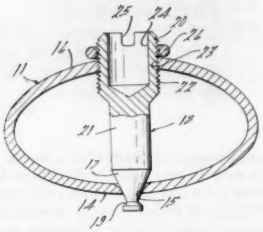
The present specification describes and claims a sprinkler system for watering lawns or beds of plants. The sprinkler system comprises a hollow body pivotally mounted on a stand

and arranged to receive and carry water under pressure, several openings being provided in the wall of the body, and a nozzle carrier in which several spray orifices are provided, the spray orifices pointing in different directions and each orifice being connectible to one of the openings in the body wall.

3,827,638
FUEL SPRAY NOZZLE

Robert M. Halvorsen, Birmingham, Mich., assignor to Ex-Cell-O Corporation, Highland Park, Mich.

Filed May 23, 1973, Ser. No. 363,055
Int. Cl. B05b 1/30
U.S. Cl. 239—534 **6 Claims**

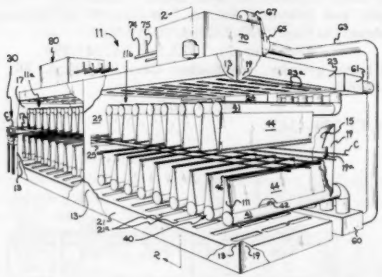


A nozzle integrally mounted in a manifold tube which distends in response to internal pressure to vary the flow rate. The nozzle comprises a pintle having a threaded mounting section and a conical seat engageable with the manifold orifice. The mounting section is threaded directly into the manifold tube and the pintle is adjustable by a screwdriver slot to achieve the proper flow setting. A brazing ring is carried by each mounting portion, and all pintles on the manifold are simultaneously secured in position by placing the manifold in a brazing furnace.

3,827,639
DRYING CHAMBER APPARATUS

James G. Relue, 6015 Granville Dr., Sylvania, Ohio 43560, and Weston C. Jones, 3423 Muirfield Ave., Toledo, Ohio 43614

Division of Ser. No. 215,355, Jan. 4, 1972. This application Apr. 26, 1973, Ser. No. 354,835
Int. Cl. B05b 1/14
U.S. Cl. 239—552 **13 Claims**

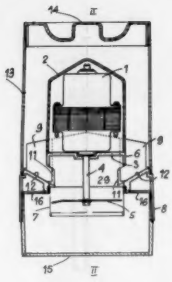


Method and apparatus for heat drying a continuous strand material by the expedient of exposing a moving array of individual strand material to blasts or jets of the heating medium as enhances accomplishment of the drying while simultaneously supporting said strand material.

3,827,640
ELECTRIC COFFEE MILL

Paul Marrie, Dijon, France, assignor to Societe Anonyme dite "ETUD", Dijon, France

Filed Nov. 28, 1972, Ser. No. 310,087
Claims priority, application France, Dec. 1, 1971, 71.043057; May 19, 1972, 72.018024
Int. Cl. A47j 42/30, 42/52; B02b 7/02
U.S. Cl. 241—100 **22 Claims**

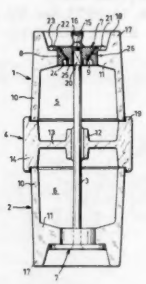


An electric coffee mill of the grinding blade type with a screen through which the ground product is removed, wherein the grain reservoir is arranged in such a way as to surmount and coaxially surround the grinding chamber which is closed at its upper end, the reservoir communicating with the chamber through two lateral, opposite openings situated at such a level that an expansion chamber is present in the upper part of the grinding chamber throughout the entire grinding operation including completion of the grinding.

3,827,641
MULTI-PURPOSE GRINDING MILL

Axel Lennart Andersson, Orrefors, Sweden, assignor to Gullaskrufs Glasbruks AB, Orrefors, Sweden

Filed Sept. 29, 1972, Ser. No. 293,495
Int. Cl. A47j 42/04, 42/10
U.S. Cl. 241—101 R **6 Claims**



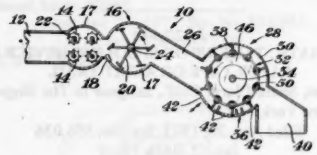
A multi-purpose pepper grinder having condiment container portions arranged generally coaxially with one another and sealingly divided by a partition member. A drive shaft extends axially through the condiment containers and the partition member, and is fixedly attached at either end to a grinding mechanism mounted in the end walls of respective containers. The grinding mechanism comprises two main sections, of which one is non-rotatably fixed to the shaft and the other is non-rotatably mounted in the container end wall. The sections are provided with inlet and outlet passages for the unground and ground condiment respectively.

3,827,642

FEED PARTICULATOR APPARATUS

Frank W. Sageman, Priemer Rd., Ubly, Mich. 48475

Continuation-in-part of Ser. No. 146,658, May 25, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,649
Int. Cl. B02c 4/12
U.S. Cl. 241—101.7 8 Claims



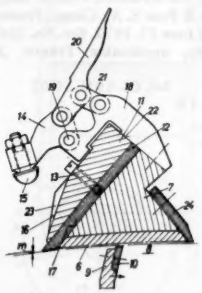
The present invention is an improved feed particulator apparatus particularly suitable for use with forage harvesters. These harvesters consist of a gathering unit and feed rolls which feed a material to a cutter unit for chopping or slicing. The present feed paticulator apparatus comprises a cylinder having projecting teeth which cooperates with a curved arcuate member which also can be fitted with projecting teeth. Each tooth has sharp-edged angled ridges on its sides such as are present in a file, e.g., and a notched shoulder at its outer tip. A tapered ridge-containing bar is mounted on the arcuate member between at least two rows of teeth. When used in combination with a forage harvester the present apparatus is positioned rearwardly of the cutter unit of the forage harvester.

3,827,643

WOOD COMMINUTING APPARATUS

Werner Grube, Brackwede; Karl-Friedrich Rutz, Guetersloh; Berthold Jung, Herford, and Johannes Schrage, Brackwede-Holtkamp, all of Germany, assignors to Maschinenfabrik B. Maier KG., Brackwede, West Germany

Filed Feb. 5, 1973, Ser. No. 329,997
Claims priority, application Germany, Feb. 15, 1972, 2205489
Int. Cl. B02c 18/18
U.S. Cl. 241—221 8 Claims



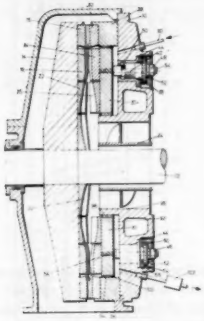
A wood comminuting apparatus has a fixed drum cage on the periphery of which are mounted a plurality of axially extending blade bars. Each blade bar has a surface upon which is supported a blade and a blade retaining plate. A clamping lever is mounted on a bracket which is fixed to the blade bar. The clamping lever acts upon the blade retaining plate to press the plate and blade against a supporting surface of the bar and to position the cutting edge of the blade to expose a predetermined portion of the cutting edge.

3,827,644

GRINDING APPARATUS

Johan Gunnar Inge Johansson, Taby, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

Continuation of Ser. No. 6,112, Jan. 27, 1970, abandoned. This application July 1, 1971, Ser. No. 159,069
Claims priority, application Sweden, Feb. 19, 1969, 2311/69
Int. Cl. B02c 7/06
U.S. Cl. 241—259.3 21 Claims



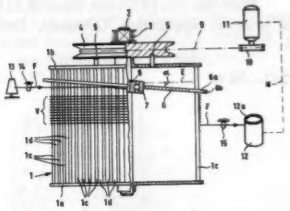
A grinding apparatus having a pair of grinding discs, at least one of which discs being rotatable and at least one of the discs being adjustable with respect to the other disc by means of two concentric interengaging screws, the outer screw surrounding the inner screw also engaging a part of the casing carrying the adjustable disc.

3,827,645

POSITIVE THREAD DELIVERY DEVICE FOR TEXTILE MACHINES

Karl Isac Joel Rosen, S-52300, Ulricehamn, Sweden

Filed Nov. 24, 1972, Ser. No. 309,289
Int. Cl. B65h 51/22
U.S. Cl. 242—47.12 10 Claims



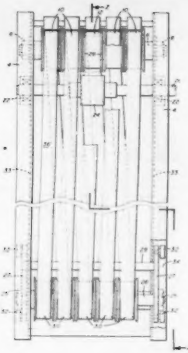
A positive thread delivery device comprising a rotatable thread storage means upon which a number of turns of thread can be wound so that thread can be received tangentially and positively delivered tangentially upon rotation of the storage means, and a drive connection on the storage means connectable to a drive connection on a textile machine for rotating the storage means according to the thread consumption by the machine. The invention also includes a method of delivering thread to a textile machine in which thread is drawn from a supply by a positive feed storage device upon which a supply of thread is maintained, the storage device being driven in synchronism with the machine to deliver thread to the machine at the same rate as its consumption rate by the machine.

3,827,646

ELEVATOR MECHANISM FOR REDUCING WEB TENSION AND CONTROLLING ELEVATOR DESCENT

Leroy C. Nielsen, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,166
Int. Cl. B65h *75/00*
U.S. Cl. 242—55.01 6 Claims



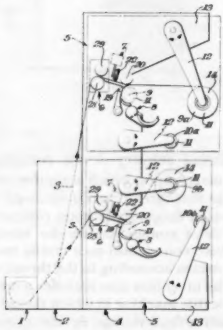
An improved elevator mechanism for reducing the tension of the web to a tolerable value, and for controlling the rapid descent of the movable carriage of the elevator mechanism. A series of film supporting spools is provided at the top and bottom of the elevator mechanism to form a multiplicity of film storage loops. The improved elevator mechanism comprises providing a deflectable top spool which is movable by web tension into engagement with an overdriven drive roller.

3,827,647

AUTOMATIC TAPE WINDING MACHINE

Willi Jores, Opladen; Hans Gref, Cologne; Helmut Lehmann, Leverkusen; Franz Hoffacker, Langenfeld; Hermann Luhrig, and Bernhardt Kreit, both of Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 26, 1972, Ser. No. 318,211
Claims priority, application Germany, Dec. 30, 1971, 2165525
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 R 16 Claims



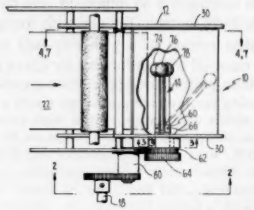
The automatic tape winding machine comprises a plurality of driven winding shafts, a winding-on mechanism and a cross cutting unit for cutting tapes. The winding shafts are mounted on pneumatically pivotal arms in such a way that the packages do not touch one another when the winding shafts are swung in or out. When swung in, some of the winding shafts are initially situated in the vicinity of the winding-on units and are then swung out by completed packages, whilst at the same time the rest of the winding shafts remain stationary in readiness to receive empty winding tubes after the completed packages have been removed.

3,827,648

AUTOMATIC TAKE-UP OR SPOOLING DEVICE FOR PAPER TAPE OR AUDIT TRAIL

Riaz Rafaat, Santa Clara, Calif., assignor to The Singer Company, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 356,036
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 6 Claims



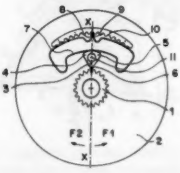
An apparatus for automatically starting and spooling of paper tape or other record media into roll form on an expandable and rotatable take-up. As the tape is initially fed into a housing, the core is expanded and its friction members engage and cause the tape to wind within itself into a roll of ever decreasing size forcing the core to retract and then wrap around the retracted core. Then continued rotation of the core forms the tape into conventional roll form. Means are also provided for facilitating access to the roll and for separation of the completed roll from the core.

3,827,649

CLICK PAWL DEVICE

Jean Noel Payen, Aix-les-Bains, France, assignor to Etablissements Carpano & Pons S. A., Cluses, France

Filed June 27, 1972, Ser. No. 266,546
Claims priority, application France, June 30, 1971, 71.23932
Int. Cl. A01k *89/02*
U.S. Cl. 242—84.1 R 4 Claims



A click pawl device for fishing reels includes a pivoted triangular click pawl having an apex urged into operative contact with a rotatable toothed wheel by a spring wire including (a) an elongate substantially rectilinear central portion bearing against a face of the pawl opposite said apex and (b) two bent-over portions including ends protruding outwardly from said face of the pawl and from the toothed wheel. Said ends can be

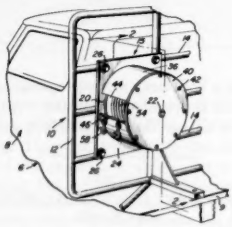
selectively placed in inwardly directed notches spaced apart along an arcuate member disposed substantially concentrically to the axis of the wheel, to enable variation at will of the noise and braking effect produced by the click pawl for both directions of rotations of the wheel.

3,827,650

TRUCK MOUNTED WRAPPER CABLE STORAGE MEANS

Ray C. Stevens, Box 173, and Joe E. Stevens, Box 173, both of Kootenai, Idaho 83840

Filed Apr. 26, 1973, Ser. No. 354,903
Int. Cl. B65h 75/00
U.S. Cl. 242—86.5 R 2 Claims



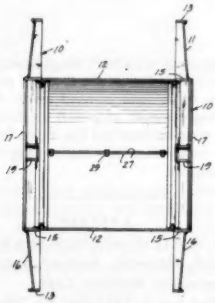
A storage unit for wrapper cables, load binders or the like which are used to secure logs onto the load bed of a truck so that such cables or binders will be conveniently stored in a readily accessible position and in tangle free condition during periods when they are not in use such as when the truck is returning in empty condition for another load of logs. The storage unit includes a spring loaded drum assembly mounted on the bangboard of the truck at a convenient height to be reached by a person when standing on the ground.

3,827,651

KNOCK-DOWN SHIPPING CABLE REEL

James L. Benson, Silvis, and William Sellmann, Rock Island, both of Ill., assignors to The George Evans Corporation, Moline, Ill.

Filed June 12, 1972, Ser. No. 261,940
Int. Cl. B65h 75/22, 75/14
U.S. Cl. 242—115 2 Claims



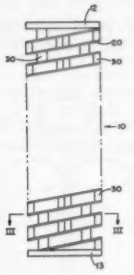
Knock-down reel structure for shipping heavy electric cable, wire rope and the like, in which the reel is disassembled when empty and returned to its shipping point in a knocked-down condition. The reel is in the form of two annular flanges or heads having radially outwardly opening channels extending inwardly of the inner margins thereof, for interlocking engagement with radial flanges at opposite ends of drum sections, in which the drum sections are in abutting engagement with each other, providing a cylindrical drum between the flanges and bolted or otherwise secured to each other.

3,827,652

COLLAPSIBLE DYE SPRING OR THE LIKE

Robert L. Burchette, Jr., 570 El Paso St., Spartanburg, S.C. 29303

Filed Dec. 21, 1972, Ser. No. 317,130
Int. Cl. B65h 75/20
U.S. Cl. 242—118.11 17 Claims



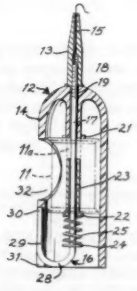
A collapsible dye spring or the like described and claimed herein suitable for use for winding textile yarn thereon and dyeing same while the spring is in a partially collapsed condition. In the collapsed condition, adequate and uniform dye flow from the inside of the tube outwardly is permitted to evenly dye the yarn wound thereon. A tube having terminal flanges or rings is provided with at least one continuous helical lead of a predetermined pitch extending between and joining the flanges. The helical lead is flexible and is provided with means along its length to rigidify the tube and limit the axial compression of same. In the preferred form of the spring, a plurality of helical leads of predetermined pitches extend continuously from the first ring to the second ring with a plurality of generally perpendicularly disposed members connecting the leads along the length of the helices, the perpendicular disposition being with respect to the rings and not the leads. Also the members connecting the leads may have additional material surrounding same that tapers quickly into the lead outwardly from the perpendicular member.

3,827,653

THREAD DISPENSING BOBBIN

Anna J. Taylor, 518 North K, Livingston, Mont. 59047

Filed June 22, 1973, Ser. No. 372,840
Int. Cl. B65h 35/10, 49/00, 49/18
U.S. Cl. 242—137.1 7 Claims



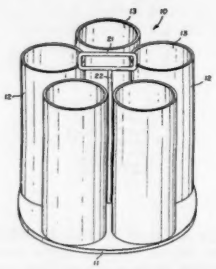
A bobbin for manually dispensing thread from a spool rotatably held within an elongated housing. Thread is guided from the spool, through a spool support and out through a thread dispensing tip. Tension is imparted to the thread as it is

dispensed through the tip by a compression spring which exerts a constant axial force against the spool. Compression of the spring and tension of the thread is adjustable by turning the tip about its axis with respect to the spool support.

3,827,654
YARN CADDY

Fern E. Armstrong, 11 Edgewood Dr., Baldwinsville, N.Y. 13027

Filed Dec. 16, 1971, Ser. No. 208,681
Int. Cl. B65h *49/36*
U.S. Cl. 242—146 **5 Claims**



A yarn caddy holds a skein of yarn in each of several upright tubes for paying yarn out of the open top ends of the tubes for multi yarn, manual knitting. The tubes are supported on a flat disk that is preferably mounted for rotation on a support for twisting the yarns as they pay out of the tubes.

3,827,655
SHORT RANGE GUIDED MISSILE

Samuel A. Humphrey, and Charles W. Kissinger, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1963, Ser. No. 328,131
Int. Cl. F41g *7/08, 9/00*; **F42b** *17/00*
U.S. Cl. 244—3.15 **2 Claims**

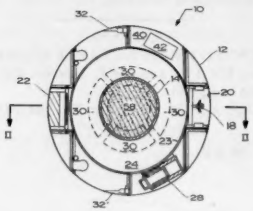
A submarine launched missile having a solid propellant rocket motor portion and a weapon portion is adapted for guidance from the water through the air and after motor burn out, followed by motor and weapon separation, aerodynamic steering of the weapon to the target point by a terminal guidance system for control of movable surfaces on the weapon.

3,827,656
PROTECTIVE WEAPON FOR ATTACK AIRCRAFT

Ronald F. Dettling; John E. Bush, and Thomas R. Zulkowski, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 6, 1972, Ser. No. 215,928
Int. Cl. F42b *15/02*
U.S. Cl. 244—3.16 **8 Claims**

A weapon for attack aircraft. The weapon has an omnidirectional launch capability. The weapon is lenticular shaped with a warhead in the center. The weapon is controlled by an electronic seeker and is propelled by a rocket motor with a two dimensional truncated spike nozzle. The propellant tank

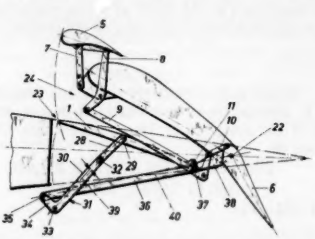


is pressurized by a boot strap mono-propellant gas generator. Control at launch is provided by flexible expandable panels which establish initial aerodynamic stability.

3,827,657
FLAP ARRANGEMENT FOR THRUST DEFLECTION IN AIRCRAFT

Hans-Jurgen Schwarzler, Munich, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed Feb. 8, 1973, Ser. No. 330,475
Claims priority, application Germany, Feb. 16, 1972, 2207189
Int. Cl. B64c *9/20*
U.S. Cl. 244—42 DA **11 Claims**



A flap arrangement in aircraft wings having a pair of flaps in stacked disposition and normally forming part of a wing. The flaps have their front ends pivoted up to define a flow and thrust redirecting channel, in which the lower flap is aligned with the upper wing surface and the upper flap is erected sufficiently high to establish a flow redirecting channel with converging cross section.

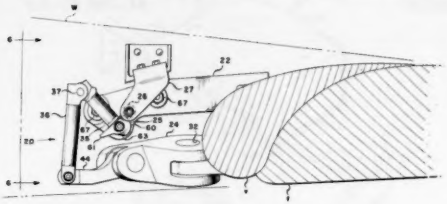
3,827,658
ACTUATING MEANS FOR A VANE

Robert Hallworth, Rochdale, England, assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 5, 1973, Ser. No. 348,269
Int. Cl. B64d *9/10, 9/20*
U.S. Cl. 244—42 DB **1 Claim**

A mechanism, two of which position a vane in proper working and aerodynamic relationship with a flap throughout the latter's travel in a Fowler flap assembly for an aircraft. The forward end of a folding linkage is operatively connected, via a vane support fitting, to a vane, and is operatively connected at its rear end to a flap. Each vane support fitting is secured to one or more carriages having banks of rollers mounted on tracks fixed to wing structure. A cam is mounted on the forward end of the linkage to co-act with a follower stationarily

disposed upon wing structure. In flap extension, the latching of cam upon follower prevents the folded linkage, its vane support fitting and vane from further opening and extending. Continued rotation of the unfolding linkage and cam provides disengagement from the follower. The linkage unfolds to a biased stiff or unyielding position as the flap pulls the linkage. In flap retraction, engagement of cam with follower breaks the



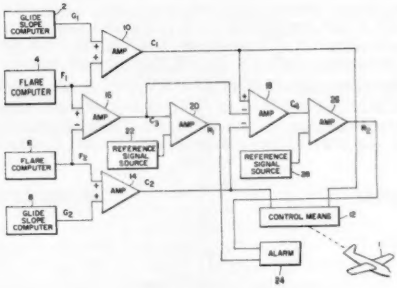
biased unyielding position of the linkage. The linkage folds as the flap retracts. The vane does not further retract until the linkage is folded to a degree where the cam can pass by its follower. The folding linkage includes a spring-piston-cable arrangement which assures biasing thereof in its unyielding and extended position, until the cam engages the follower in the retracting mode for the flap.

3,827,659

CONTROL SYSTEM MONITORING APPARATUS HAVING MINIMAL NUISANCE ALARM CHARACTERISTICS

Martin William Feintuch, Paramus, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 7, 1973, Ser. No. 338,800
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 M **4 Claims**



Apparatus for monitoring dual channel equipment such as used in aircraft control systems, and including apparatus for implementing the monitoring without sacrificing channel isolation while distinguishing between actual system failures and apparent failures due to tolerance build-ups.

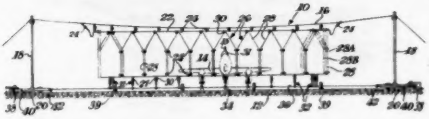
3,827,660

AIRCRAFT ARRESTING APPARATUS

Donald B. Doolittle, Wilmington, Del., assignor to All American Industries, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 312,254, Dec. 5, 1972. This application Mar. 29, 1973, Ser. No. 345,877
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **30 Claims**

A compound array of vertically deployed open loops of strong inelastic webbing having a maximum dimension slightly smaller than the wingspan of the aircraft to be arrested are detachably hung from a suspension line stretched above and across the runway. The array includes a number of laterally overlapped net elements which present enough loops to seucrely engage and restrain an aircraft which penetrates any portion of the barrier. Slide connectors attach lower portions of the loops to a rearwardly deployed cross runway pendant connected between a pair of energy absorbing devices. When an aircraft impinges upon the barrier, the loops break away from the suspension line and freely move to engage the stronger larger dimensional portions of the aircraft from behind and below it. The loops are conveniently deployed in a pentagonal configuration with their peaked tops connected to the suspension line, their sides breakably connected to each other and bottoms attached by slide connectors to a steel cross runway pendant, which can be optionally used for hook arrestment when the barrier is lowered. The nose wheels pass over and clear the cross runway pendant before the aircraft en-



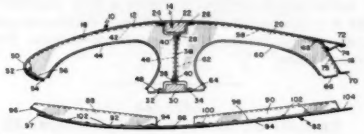
gages the deployed barrier and its pendant anchored loops, which pull upwardly upon the pendant. The slide connectors are capable of considerable elongation without breaking when a predetermined force exceeding a safe holding force for their attached loops engaged aircraft portion is applied to them. When the elongation brings a sufficient number of loops into engagement, the connectors stop elongating and hold, thus applying substantially safe balanced restraint upon the engaged portions of the aircraft. The elongation is accomplished by stitched folded straps of an unyielding material or by use of a yielding material such as undrawn nylon or a low modulus of elasticity metal, such as annealed stainless steel. The elongatable or extensible connectors are assembled from disconnectable parts to facilitate removal and replacement after permanent distortion. The pendant is coated with an antifriction polymeric material to facilitate lateral sliding adjustment of the connectors and loops.

3,827,661

AIRCRAFT WING STRUCTURE AND METHOD OF ASSEMBLY

T. Claude Ryan, San Diego, and Peter F. Girard, La Mesa, both of Calif., assignors to Ryson Aviation Corporation, San Diego, Calif.

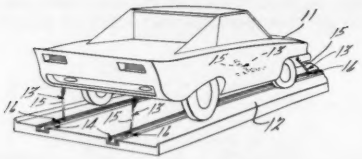
Filed July 26, 1972, Ser. No. 275,250
Int. Cl. B64c *1/00, 3/00*
U.S. Cl. 244—123 **2 Claims**



An aircraft wing comprising an upper shell and a lower shell secured together to form a complete wing. The wing is of metal construction particularly adapted for assembly on an automobile rivetting machine, the use of two pre-assembled shells providing the necessary access to both sides for the rivetting machine to operate. The upper shell includes the top skin, ribs, spars and leading edge assembled in accurate airfoil configuration, the lower shell comprising the lower skin with

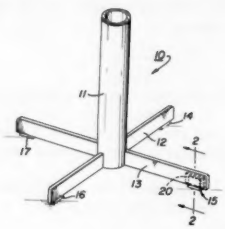
attached stiffeners conforming to the lower contour of the airfoil section. Assembly of the shells is made primarily by blind rivets with conventional solid rivets where accessible.

3,827,662
CARGO TIE DOWN
Raymond M. Krokos, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.
Continuation of Ser. No. 110,030, Aug. 27, 1971, abandoned.
This application Oct. 26, 1972, Ser. No. 300,880
Int. Cl. B65j 1/22
U.S. Cl. 248—119 R **6 Claims**



A device for tying down cargo, particularly motor vehicles, during shipment. The tiedown device has a simplified, compact arrangement that facilitates assembly and disassembly. A thrust taking member is fixed to a shaft on which a flexible transmitter is wound and is positioned between a pair of supporting members for absorbing lateral thrust.

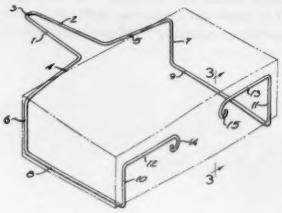
3,827,663
SELF-ADJUSTING FURNITURE SUPPORT
Arch E. Hinman, South Elgin, Ill., assignor to Johnson Industries, Inc., Elgin, Ill.
Filed Nov. 8, 1972, Ser. No. 304,613
Int. Cl. A47b 9/00
U.S. Cl. 248—188.3 **6 Claims**



A self-adjusting support includes a foot member spring biased in a downward direction along a rectilinear guideway extending at an angle of about twenty degrees from the horizontal plane.

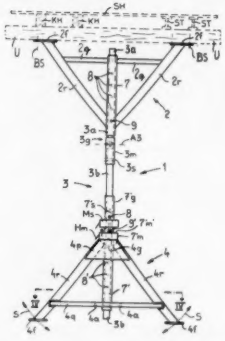
3,827,664
TISSUE BOX HOLDER FOR AUTOMOBILES
Perley E. Larson, 8408 191st S. W., Edmonds, Wash. 98020
Filed Oct. 24, 1972, Ser. No. 299,718
Int. Cl. B60r 7/00
U.S. Cl. 248—311 **1 Claim**

A length of spring wire is bent to provide a mounting support having two slightly diverging arms, which then diverge sharply in a common plane to downwardly bent parallel portions at right angles to the common plane of said arms forwardly extended parallel portions at right angles to the downwardly bent portions, upwardly extended parallel portions at the forward end of said forwardly extended portions and free end portions extended toward each other from the top of the upwardly extended portions and terminating in



safety curls to engage and press a box of tissue resting on said forwardly extended portions against the downwardly bent portions.

3,827,665
SUPPORT STRUCTURE FOR OVERHEAD CONCRETE MOLDING FORMS
Laurenz Kistler, Steinhauserstrasse 25, Zug, Switzerland
Filed Feb. 5, 1973, Ser. No. 329,729
Claims priority, application Switzerland, Feb. 7, 1972, 1724/72
Int. Cl. E04g 25/00
U.S. Cl. 248—354 P **9 Claims**

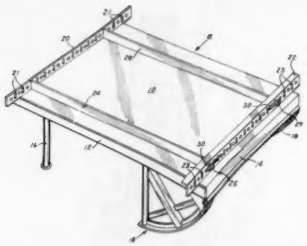


Floor and ceiling supports, both generally V-shaped, are connected by a central post-like intervening spacer structure portion, the open arms of the V bearing against the ceiling, to be poured, and the floor or support, which may be a previously poured cement construction, respectively; the V-shaped support portions are preferably made of welded pipes, connected with the central spacer portion by holes and cross pins fitting into the holes to adjustably space the floor and ceiling portions, and permit limited swinging movement to allow for slight misalignments. The erected support structure of the double-V form is laterally maintained in position by stiffening members, preferably clamped to the post-like spacer and providing laterally extending clamp connections for pipe length to hold the support structure in lateral alignment.

3,827,666
TILTABLE FORM FOR PREFORMED BRICK WALL

Edward J. Dreher, 5841 E. 67th Ave., Commerce City, Colo. 80022

Continuation-in-part of Ser. No. 5,774, Jan. 26, 1970, Pat. No. 3,642,395. This application Dec. 16, 1971, Ser. No. 208,722
Int. Cl. E04g *11/00*
U.S. Cl. 249—18 3 Claims

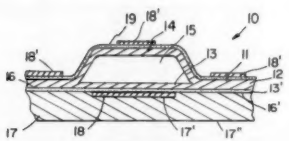


Apparatus for producing variable width brick panel sections, having a planar table arranged to tilt from a horizontal to a vertical position, includes a removable frame, for resting on the planar table, including adjustable sides for predetermining the width of the panel to be built, and a tilt stand at one end of the table permits standing the unit vertically to discharge a finished panel. Spacers providing endwise and edgewise spacing of placed bricks on the planar table are readily removed prior to the addition of mortar trowelled into the spaces between the prepositioned brick.

3,827,667
COMPOSITE MOLD WALL STRUCTURE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 53,833, July 10, 1970, abandoned, and a continuation-in-part of Ser. No. 601,259, Nov. 1, 1966, Pat. No. 3,529,987, and a continuation-in-part of Ser. Nos. 432,033, Nov. 25, 1964, Pat. No. 3,414,863, and Ser. No. 432,924, Jan. 8, 1965, Pat. No. 3,346,220, and a continuation-in-part of Ser. No. 641,101, Feb. 19, 1957, Pat. No. 3,173,195, and a continuation-in-part of Ser. No. 734,340, May 9, 1958, Pat. No. 3,173,175. This application Oct. 24, 1972, Ser. No. 300,299
Int. Cl. B22d *27/04*
U.S. Cl. 249—80 10 Claims

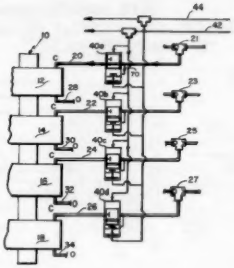


Composite structures are provided in the construction of heat transfer panels such as utilized in the making of large molds for producing articles of manufacture in molding cavities thereof wherein heat is transferred to and/or from the molding material during the molding process. The constructions involve the use of a relatively thin metal sheet or panel in combination with a bulk material such as ceramic material forming the major portion of the mold structure and providing support for the sheet material. Constructions are provided in which a heat transfer passageway is formed within or between the sheet material and the backup material through which heat transfer fluid may be flowed. The invention also consists of simple methods for forming the heat transfer molds.

3,827,668
LOCKING SYSTEM FOR A BLOWOUT PREVENTER

Douwe De Vries, and Samuel E. Gilmore, both of Houston, Tex., assignors to C. Jim Stewart & Stevenson, Inc., Houston, Tex.

Filed Oct. 5, 1972, Ser. No. 295,344
Int. Cl. E21b *33/06*; F15b *11/16*, *13/01*
U.S. Cl. 251—1 3 Claims

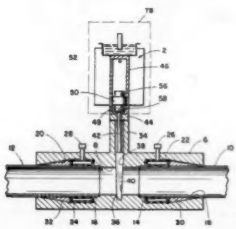


A locking system for a blowout preventer having a plurality of individually actuated hydraulic rams. A pilot operated locking valve for each ram for locking the ram in the closed position in which all of the locking valves are pilot operated to open and close simultaneously by two common pilot lines. The locking valves are of the positive shut-off shear-seal type. They include a hydraulic override so that if one ram is closed and locked, which puts all of the locking valves in the closed position, a second ram can still be closed by applying more pressure in the closing line of that ram than applied in the pilot closing line, all without interrupting the other locking valves.

3,827,669
REMOTE CONTROL HYDRAULIC VALVE

Fletcher Rodgers, Alva, Okla.

Filed May 7, 1973, Ser. No. 358,159
Int. Cl. F16k *31/143*
U.S. Cl. 251—62 6 Claims

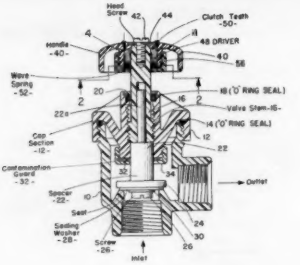


A device adapted to be installed in a pipe line, or the like, at a remote site and operated by remote control for selectively closing the pipe line for interrupting the flow of fluid therethrough. The device comprises a valve interposed in the pipe line and having a valve stem responsive to hydraulic pressure for alternately opening and closing the valve. The flow of hydraulic fluid is controlled by a motor which may be actuated from a main site whereby the hydraulic fluid may be directed to the valve stem in one direction for closing of the valve, and in a reverse direction for opening of the valve.

3,827,670
VALVE ASSEMBLY

Myrl J. Saarem, Carson City, Nev., assignor to Richdel, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 314,177, Dec. 11, 1972, abandoned. This application June 12, 1973, Ser. No. 369,260
Int. Cl. F16k 31/44
U.S. Cl. 251—81 5 Claims

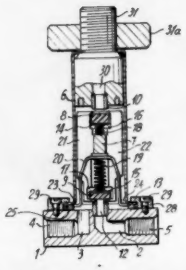


A manually operated angle valve assembly is provided which has particular, although not exclusive utility in sprinkler systems, or the like. The valve assembly of the invention serves to shut off and regulate the water flow from a supply source to the sprinkler heads or other outlets of the sprinkler system. The valve assembly to be described is formed of plastic components, and it incorporates a slip clutch between the handle and the valve stem which serves to obviate high stresses in the valve as it is closed. By such a construction, the objectionable characteristic of creep in the plastic parts of the valve is eliminated. The valve assembly also incorporates an improved contamination guard, and improved thread terminations, as will be described.

3,827,672
ELECTROMAGNETICALLY CONTROLLED FLUID-OPERATING VALVE

Harald Stampfli, Petit-Saconnex, Switzerland, assignor to Lucifer S.A., Carouge-Geneva, Switzerland

Filed Dec. 13, 1972, Ser. No. 314,598
Claims priority, application Switzerland, Dec. 29, 1971, 19108/71
Int. Cl. F16k 31/06
U.S. Cl. 251—129 5 Claims

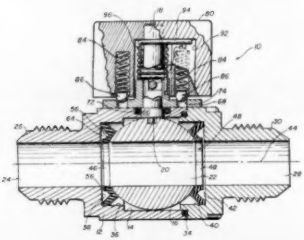


An electromagnetically controlled valve wherein the sealing member is subjected to a reduced straining through the fact that the usual valve-closing spring is inserted between a stationary transverse supporting member and a sealing member floatingly carried inside a recess provided in an electromagnetically controlled core. Thus the spring acts, upon deenergization of the controlling coil, on the sealing member to urge it against a flange surrounding the opening of the recess, an idle motion being afforded for the core beyond the point corresponding to engagement between the scaling member and its seat to allow the core to continue its return movement to a slight extent without interference of the spring.

3,827,671
LOW PRESSURE BALL VALVE WITH ANNULAR SEAL

James D. Bolden, and Floyd G. Koller, both of Dayton, Ohio, assignors to Auto-Valve, Inc., Dayton, Ohio

Filed June 11, 1973, Ser. No. 368,690
Int. Cl. F16k 5/14
U.S. Cl. 251—84 11 Claims

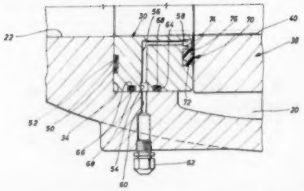


A valve comprising a valve body in which a ball valve is centered between two annular seals. The seals are made from an elastic material like rubber and have a thin layer of Teflon on the sides facing the ball valve. The seals are specially shaped to provide for a low seal-loading pressure and to seal at the upstream side of the valve. A spring loaded handle is biased to urge the valve to a closed position.

3,827,673
VALVE SEAT CONSTRUCTION

Robert C. Houlgrave, 2500 Lazy Hollow No. 124C, and Joseph P. Weber, 9618 Windswept, both of Houston, Tex. 77042

Filed Mar. 16, 1973, Ser. No. 342,223
Int. Cl. F16k 3/00
U.S. Cl. 251—360 2 Claims

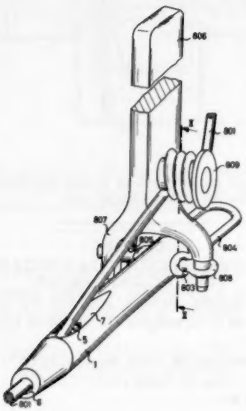


A valve seat construction and method of inserting and securing a sealing member in a so-called dovetailed groove within a seat ring. The sealing member is first positioned beneath one flange overlying the groove and then a second flange is folded over the sealing member to complete the dovetailed groove. The sealing member projects between and beyond the groove and a void space is provided within the groove at least equal to the portion of the sealing member projecting beyond the face of the seat ring. A lubricant groove is positioned adjacent the sealing member to provide a secondary lubricant seal.

3,827,674
DEVICE FOR CLAMPING AND TIGHTENING CABLES AND THE LIKE

Max Pasbrig, Casa Luce-Via all'Eco, Orselina, Switzerland

Division of Ser. No. 820,410, April 30, 1969, Pat. No. 3,628,221. This application July 26, 1971, Ser. No. 166,277
Int. Cl. B66f 7/06
U.S. Cl. 254—73 12 Claims

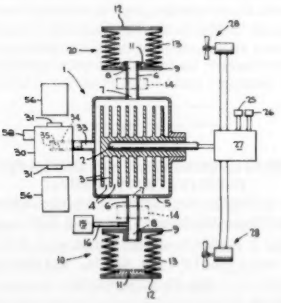


The invention relates to a device for detachably connecting, fixing and tightening connecting elements, particularly electric cables, wire ropes, chains, belts and the like. The device consists of a housing equipped with a recess with wedge shaped clamping surfaces against which at least one spring-loaded clamping member tightens at least one associated connecting element. The connecting element passes rectilinearly through the housing and may be fitted thereinto from the side. A sleeve or bush is provided for releasing the clamping effect, is displaceable on the housing and surrounds the same wholly or partially. The clamping device may be constructed as a closure in which case the connecting element has a pan-shaped configuration.

3,827,675
OSCILLATING BELLOWS

Mark Schuman, 101 G. St., S.W., Washington, D.C. 20024

Filed Apr. 6, 1972, Ser. No. 241,742
Int. Cl. G01j 3/30
U.S. Cl. 356—85 91 Claims

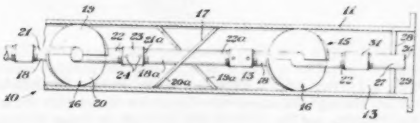


One or more bellows are driven in an oscillatory manner in response to a mass of compressible fluid that is cyclically heated and cooled. The fluid is heated in a thermal lag heating chamber in fluid flow relationship with the bellows which cools the fluid. Cooling of the bellows, and therefore the fluid within the bellows, is augmented by fans blowing cool air over the folds of the bellows. An optical chamber for analyzing gas being pumped by the bellows is provided.

3,827,676
INTERFACIAL SURFACE GENERATOR

William C. Brasie, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1972, Ser. No. 293,826
Int. Cl. B01f 15/00
U.S. Cl. 259—4 3 Claims

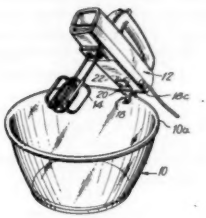


An interfacial surface generator is shown having a jointed central support means which facilitates its insertion in conduits where limited room is available.

3,827,677
HANGER DEVICE FOR PORTABLE MIXERS

Carl E. Meyerhoefer, Little Neck, N.Y., and Richard J. Naples, New Britain, Conn., assignors to General Signal Corporation, New York, N.Y.

Filed Jan. 12, 1973, Ser. No. 323,331
Int. Cl. B01f 7/16, 15/00; A47g 29/00
U.S. Cl. 259—104 5 Claims



A support device is disclosed for use with a portable food mixer or the like so that the mixer can be parked or camped alongside of or on the edge of a bowl or other vessel when it is not is use, whereby undesired dripping is avoided.

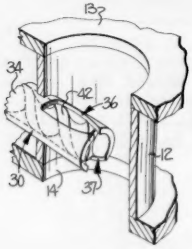
3,827,678
ADDITIVE METERING APPARATUS FOR PLASTIC PROCESSING MACHINE

Charles Lee Andrews, III, 606 Whittington Pl., Statesville, N.C. 28677

Filed Nov. 27, 1972, Ser. No. 309,950
Int. Cl. B01f 7/08
U.S. Cl. 259—191 8 Claims

An apparatus for metering and mixing dry particulate additive with a dry particulate plastic material prior to heating the mixture and molding or injecting the same to form a finished article. The apparatus includes a vertically disposed feed throat tube through which the plastic material is adapted to be fed downwardly into the processing machine. A horizontally

directed tubular member extends into the feed throat tube for delivering the additive, the tubular member including vertically aligned upper and lower openings and an open forward end positioned within the feed throat tube. By this arrangement, a portion of the plastic material enters the tubular member through the upper opening and is mixed with the additive therein, and the mixture falls through the lower opening and the open forward end of the tubular member.



3,827,679

METHOD OF INTRODUCING OXYGEN INTO A LIQUID TO BE CLARIFIED AND DEVICE FOR CARRYING THE METHOD INTO EFFECT

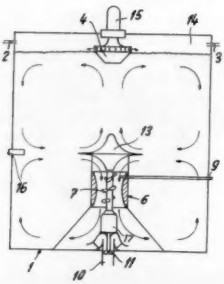
Joseph Richard Kaelin, Villa Seeburg, CH-6374 Buochs, Switzerland

Filed Aug. 14, 1972, Ser. No. 280,478

Claims priority, application Switzerland, Aug. 13, 1971, 11974/71

Int. Cl. B01f *3/04*; **C02c** *5/04*

U.S. Cl. 261—91 **4 Claims**



Method of introducing oxygen into a liquid located in an activation tank of a clarification plant. The liquid is made to circulate in toroidal flows and oxygen or air is bubbled through.

3,827,680

METHOD AND DEVICE FOR RETAINING MATERIAL WITHIN A PLUNGING BELL

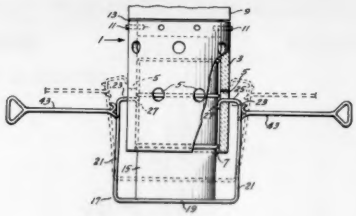
James E. Wheeler, Baltimore, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 24, 1973, Ser. No. 363,710

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 T **3 Claims**

A method and device for charging and supporting containerized reagents within a plunging bell including positioning the reagents within a plunging bell and supporting the reagents with a support member depending from the sidewalls of the plunging bell and extending across the bottom opening beneath the sidewalls of the plunging bell.



3,827,681

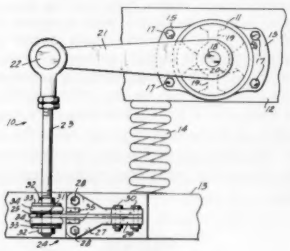
DAMPING SYSTEM ESPECIALLY SUITABLE FOR VEHICLE SUSPENSIONS

John Clayson Schultz, Buffalo, and Tsu Pin Shyu, Cheektowaga, both of N.Y., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,271

Int. Cl. B60g *15/04, 15/06*

U.S. Cl. 267—8 B **14 Claims**



A damping system especially suitable for, but not limited to, vehicle suspensions is operable in a full range from low amplitude high frequency movements between relatively movable members to high amplitude low frequency movements between the members. The system includes a damper especially effective to control the high amplitude low frequency movements and having means for mounting in on one of the members, and a device tuned to damp the low amplitude high frequency movements having means for mounting in on the other of the members and being connected in series with the damper.

3,827,682

APPARATUS FOR ROTATION OF PLATES TO FACILITATE WELDMENT

Christopher J. Foster, Sr., Sands Point, and Christopher J. Foster, Jr., Port Washington, both of N.Y., assignors to Christopher J. Foster, Inc., Port Washington, N.Y.

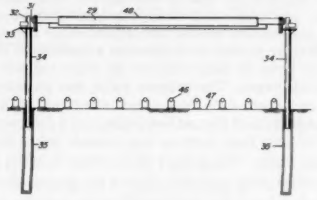
Filed Jan. 17, 1973, Ser. No. 324,445

Int. Cl. B25b *11/00*

U.S. Cl. 269—8 **12 Claims**

An apparatus and method for facilitating the weldment of plates and stiffness which form a section of predetermined size with the least amount of handling. The apparatus includes a

frame suitable to support the plates, holding devices to secure the plates to the frame, lifting mechanisms to lift the frame



and plates for rotational purposes and a drive assembly to rotate the frame in an arc of 180° to facilitate the weldment of the plates together to form a plate section.

3,827,683

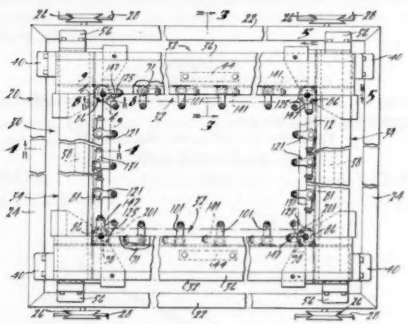
CLAMPING FRAME FOR PLASTIC SHEET MATERIAL

Earnest Y. Seborg, Rockford, and Harold R. Wanke, Cherry Valley, both of Ill., assignors to Greenlee Bros. & Co., Rockford, Ill.

Filed Mar. 6, 1972, Ser. No. 232,137

Int. Cl. B29c *17/02*; **D06c** *3/08*

U.S. Cl. 269—9 **23 Claims**



This disclosure relates to a frame for clamping a single sheet of plastic material or a pair of sheets of plastic material in parallel, closely spaced relation to each other during the routing of the plastic material through various stations during operations in which the sheet or sheets are formed into plastic products.

3,827,684

VICE

Robert Jacquet, 127, Rue Saint-Exupery 18100, Vierzon, France

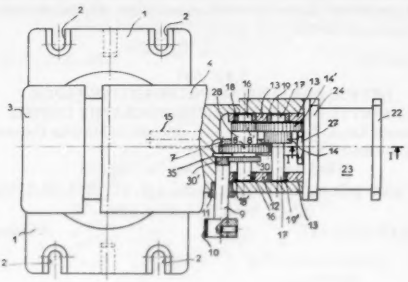
Filed Feb. 21, 1973, Ser. No. 334,249

Claims priority, application France, Mar. 2, 1972, 72.07155

Int. Cl. B25b *1/18*

U.S. Cl. 269—32 **11 Claims**

A vice having a movable jaw movable by a fluid-operated jack in which the piston rod of the jack moves a rack guided in the fixed part of the vice and connected through reduction gearing to a rack fixed to the movable jaw in arrangement such that one of the pinions of such gearing is disengageable to permit free movement of the movable jaw, such pinion being disengageable by a slidable spindle having a manually opera-



ble operating knob and preferably such that rotation of such spindle rotates the pinion with which it engages to effect manual movement of the movable jaw.

3,827,685

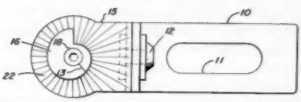
CAM STOP POSITIONING APPARATUS

Stephen B. Wennes, Minneapolis, Minn., assignor to Dayton Rogers Manufacturing Company, Minneapolis, Minn.

Filed Sept. 22, 1972, Ser. No. 291,157

Int. Cl. B25b *5/04, 5/16*

U.S. Cl. 269—229 **8 Claims**



Apparatus for positioning a work piece on a machine tool surface, said apparatus having a variable cam edge for holding the work piece and a calibrated scale for accurately repositioning the work piece.

3,827,686

STOP DEVICES

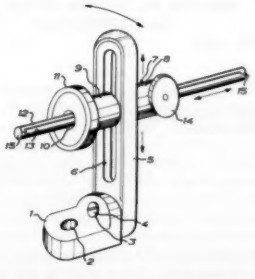
Bengt Rudolf Storkh, S-126 39 Hagersten, Pjaxvagen 12, Sweden

Filed Sept. 26, 1972, Ser. No. 292,297

Claims priority, application Sweden, Sept. 28, 1971, 12297/71

Int. Cl. B23q *3/04*

U.S. Cl. 269—315 **2 Claims**



A stop device for use in positioning work pieces which for machining purposes are clamped in a vice or other clamping means. The stop device comprises a rotary foot which can be clamped to a work table or like means, an arm pivoted to the foot and lockable in a desired position thereto, a sleeve on said

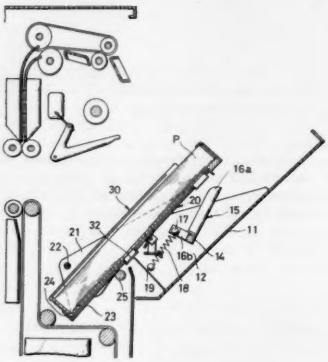
arm extending transversely of the plane of pivotment of the arm, movable in the longitudinal direction of said arm and adapted to be clamped thereto, and a stop bar movable in and lockable to the sleeve, an end portion of said stop bar forming an abutment for the work piece.

3,827,687

DEVICE FOR SUPPORTING SENSITIVE PAPER CASSETTE FOR ELECTROPHOTOGRAPHY COPIER

Tateomi Kono, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 20, 1972, Ser. No. 246,033
Claims priority, application Japan, Apr. 21, 1971, 46-31286
Int. Cl. B65h *1/12, 1/26, 3/06*
U.S. Cl. 271—117 **4 Claims**



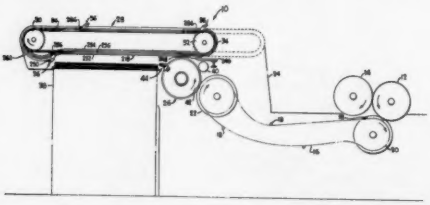
A device for supporting a cassette of sensitive papers for xerography copier to elastically urge the cassette toward the driven feed roller so as to abut the uppermost of the stacked papers to automatically feed one by one to the copying zone, the elastical urging being made at one spot at a back wall of the supporter member in cooperation with the manual closing of the casing lid, and mounting of the cassette on the supporter member is made ready by engagement of a stud having an enlarged stud planted on the back wall of the cassette with a slot having a larger hole portion and a smaller hole portion.

3,827,688

SHEET DELIVERY MECHANISM

Dennis J. Luffy, Butler, and Robert L. Mosemiller, Pittsburgh, both of Pa., assignors to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Feb. 23, 1973, Ser. No. 335,253
Int. Cl. B65h *29/04*
U.S. Cl. 271—203 **7 Claims**



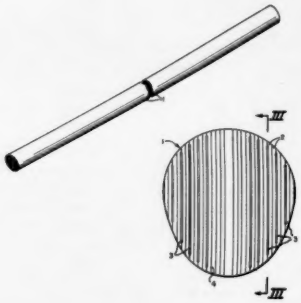
A frame member having longitudinal side members and transverse connecting members is movably supported on the side frame members of the press so that the frame member can be moved longitudinally relative to the transfer cylinder positioned therebelow. A drive shaft is rotatably journaled in the frame side members and has a plurality of drive sprockets mounted thereon in spaced relation to each other. Idler sprockets are supported from the rear transverse frame member and endless chains are reeved about the sprockets. Endless gripper guides are positioned adjacent the respective chains and have an inner rail and an outer rail with a guide track therebetween. The gripper guide has an intermediate portion at substantially the same elevation as the lower horizontal portion of the endless chains and a downwardly, depending, arcuate front portion that extends below the path of the endless chain. The gripper device that includes a pair of plates positioned on opposite sides of the gripper device has a pair of roller members positioned in the gripper track and secure the plates to each other. One of the plates has a depending arm member with a sheet gripper connected to the lower end portion of the arm. The gripper is arranged to engage the front edge of the sheet. The gripper device is connected to the adjacent chain by means of rods so that the chains propel the gripper device in the gripper track. As the gripper device is moved into the downwardly, depending, arcuate portion of the gripper track the forward velocity of the gripper device is reduced below the forward velocity of the chain connected thereto. Further, the depending arm on the plate member pivots rearwardly as it traverses the downwardly, depending, arcuate portion of the gripper track to further reduce the forward velocity of the gripper device while the chain is driven at a relatively constant velocity.

3,827,689

GYMNASTIC HORIZONTAL BAR

George W. Hyde, Mt. Pleasant, Pa., assignor to Permali Incorporated, Mount Pleasant, Pa.

Filed May 25, 1973, Ser. No. 364,017
Int. Cl. A63b *3/00*
U.S. Cl. 272—63 **5 Claims**



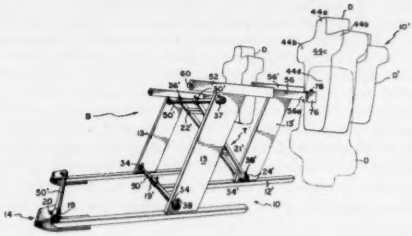
A gymnastic horizontal bar is formed from thin wooden strips extending lengthwise of the bar side by side in parallel vertical planes, with laterally spaced reinforcing tapes sandwiched between some of the strips at both sides of the longitudinal axis of the bar. The tapes and wooden strips are laminated together to form a unitary bar of increased resistance to lateral impacts. The areas of the pair of wooden strips engaging the opposite sides of each tape are compressed by the tape so that the pair of strips engage each other above and below the tape, whereby the tapes are concealed and the bar has a continuous wooden surface.

3,827,690

BLOCKING SLED

Orley David Rogers, Farwell, Mich., assignor to Rogers Athletic Co., Inc., Farwell, Mich.

Filed June 14, 1972, Ser. No. 262,689
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R 22 Claims



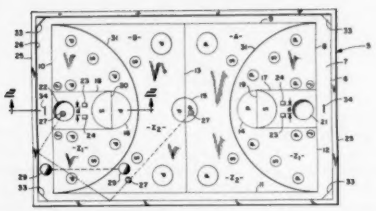
A sled for training football players in the art of blocking and tackling including any selected number of individual, indentical blocking sections each having a cantileverly supported blocking pad thereon adapted to be struck by a football player; each of the blocking sections is provided with a longitudinal runner having an upwardly extending support member for supporting the cantilever blocking pad support above the runner; the blocking sections are also adapted to be releasably coupled to an identical blocking pad section in a side-by-side relationship.

3,827,691

SIMULATED BASKETBALL GAME

Vincent A. Benander, 4810 Donald Ave., Richmond Heights, Ohio 44143

Filed Mar. 28, 1972, Ser. No. 238,827
Int. Cl. A63f 7/06
U.S. Cl. 273—85 R 12 Claims



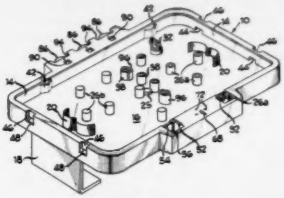
A gameboard having a flat, smooth playing surface on which a basketball court is imprinted. The court has a pair of recessed goals or baskets at opposing ends of the board for scoring points in the game. A bumper rail surrounds the playing surface of the gameboard. An ordinary penny is successively used by opponents in playing the game and scores are obtained by moving the penny into an opponent's goal. The penny may be caromed off the pumper rail in executing plays to score goals in the game. A plurality of chips are used by the opponents for blocking the pathway of the penny to the goals and a pair of upstanding spaced blocks in front of each recessed goal are utilized through which foul shots are attempted.

3,827,692

MAGNETIC TYPE GAME

Howard J. Morrison, Deerfield, and Robert K. Allen, Frankfort, both of Ill., assignors to Marvin Glass & Associates

Filed June 23, 1972, Ser. No. 265,632
Int. Cl. A63f 7/06, 9/14
U.S. Cl. 273—85 F 20 Claims



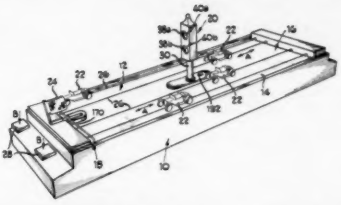
A magnetic type game simulating sports action wherein a generally horizontal, elevated playing surface is provided with a generally horizontal transparent cover disposed in spaced relationship above the playing surface. A plurality of playing pieces are disposed for movement transversely over the playing surface beneath the cover, some of the playing pieces having magnetic portions on the tops thereof representing a first team of simulated players and another set of playing pieces having magnetic portions on the bottoms thereof representing a second team of simulated players. Manipulatable members are provided for each actual player of the game for positioning either beneath the playing surface or above the cover, depending on which team of simulated players he is to manipulate, each manipulatable member having a magnetic portion which attracts the magnetic portions of the playing pieces to move a chosen one of the playing pieces over the playing surface in response to movement of a player's manipulatable member.

3,827,693

RACING TOY APPARATUS

Gordon A. Barlow, Skokie, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 15, 1973, Ser. No. 323,705
Int. Cl. A63f 9/14
U.S. Cl. 273—86 F 23 Claims



A racing toy apparatus which has an elongated raceway with starting and finishing ends. A plurality of simulated vehicles are movable in generally parallel paths longitudinally of the raceway by pulley and cable type members. A motor and reversible gear train is selectively engageable with a gear on one of the pulleys for each vehicle by a clutch operable independently by the participants to drive the vehicles in alternate forward and reverse intermittent operating intervals. A signal in the form of a traffic light is operatively associated with the reversing gear train to give a green light signal during the forward operation of the gears and a red light signal during the reverse operation of the gears. The participants attempt to be the first to move his respective vehicle to the finishing end of the raceway by timing the actuation of his individual clutch for moving his respective vehicle only during the forward operating intervals.

3,827,694
GAME APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Jan. 24, 1972, Ser. No. 220,345
Int. Cl. A63f 7/00
U.S. Cl. 273—113 9 Claims

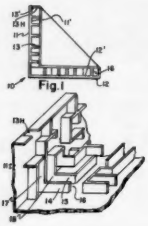


Fig. 1

Constructions are provided in game boards and game board assemblies which employ one or more balls or otherwise manipulateable objects requiring skill on the part of the player by tilting, and in certain cases upending, the device in order to obtain an objective or predetermined movements of the manipulated device.

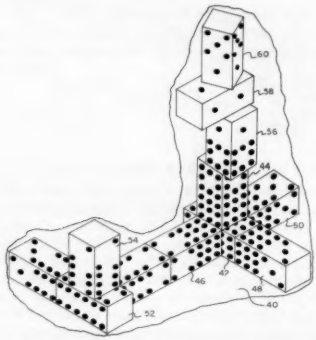
In one form, the gameboard is provided with a plurality of playing surfaces angulated with respect to each other and is shaped to permit a ball to travel from one playing surface to the other by properly manipulating the device. In another form, one or more holes are provided in the playing board surface through which a ball may fall and may be manipulated thereafter on the other playing surface. Suitable means are provided to restrict the movement of the ball against the other playing surface after it has fallen through the hole.

In yet another form, three dimensional configurations of maze type playing devices are provided which add to the playing interest and vary the degree of skill required.

3,827,695
THREE-DIMENSIONAL VERTICAL STACKING DOMINO GAME APPARATUS

Roy Paul Hess, 2760 Derbyshire, Cleveland, Ohio 44106

Filed Jan. 28, 1972, Ser. No. 221,603
Int. Cl. A63f 9/20
U.S. Cl. 273—137 D 8 Claims

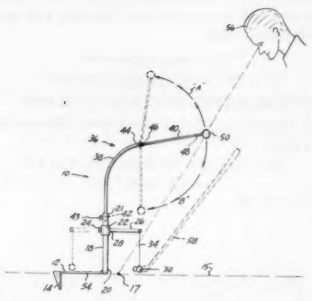


A three-dimensional vertical stacking game includes a plurality of dominoes, each of which has a body with one end face for abutting stacking engagement with a face of another domino. Indicia markings are provided on at least two marked faces of the domino which are perpendicular to the one end face. The indicia identify two portions of each of the marked faces for use in playing the game. The body also has a second end face opposite to the one end face and perpendicular to the marked faces having indicia thereon, and third and fourth faces which are perpendicular to the first and second end faces. The faces comprise surface means on which other dominoes are stacked with matching adjacent indicia on each domino. The game also includes a storage container and a shaker. The storage container holds the dominoes and shaker therefor. The game is played by at least two players. The first player places a first domino on a horizontal playing surface. The second player selects a second domino having indicia which matches the indicia on the first domino and stacks the second domino directly on the first domino in a vertical direction so that the matching indicia on the first and second dominoes are adjacent to each other. A third domino having indicia which matches either of the played dominoes is selected by a subsequent player other than the second player. The third domino is placed in abutting relationship to the matching domino so that the matching indicia are adjacent to each other.

3,827,696
GOLF SWING TRAINING DEVICE

Richard A. Schafer, 38141 Donald, Livonia, Mich. 48154

Filed Nov. 21, 1973, Ser. No. 417,749
Int. Cl. A63b 69/36
U.S. Cl. 273—183 E 10 Claims



A golf swing training device and practice tee for aiding a golfer in developing the habit of keeping his head down while swinging a golf club. The training device includes a pivotally mounted horizontal attachment bar which selectively pivots in a horizontal plane, a golf ball suspended by a tether from the attachment bar, and an adjustable sighting guide member located between the golfer's head and the tethered golf ball. The golfer using the device may hit the tethered golf ball or alternatively, may pivot the tethered golf ball out of the way and substitute an untethered golf ball therefor.

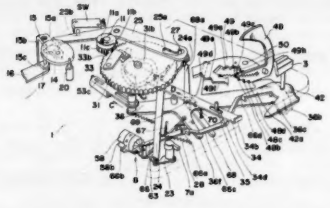
3,827,697
AUTOMATIC RECORD PLAYER

Seizo Miyoshi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 1, 1972, Ser. No. 249,109
Int. Cl. G11b 17/16
U.S. Cl. 274—10 R 4 Claims

An automatic record player having a record changer by which a stack of records mounted on a changer spindle extending above the center of a turntable can be successively played out, wherein a cycle adjusting control is provided for enabling the record player to operate a predetermined number of times irrespective of the number of the records

mounted on the changer spindle. To this end, there is provided an index wheel having a plurality of characters on its peripheral surface for showing the number of records left unplayed or the desired number of performance done by the record player in an operative association with the movement of the tone arm.

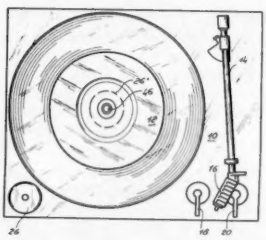


3,827,698

RECORD SEQUENTIALLY POSITIONING DEVICE FOR AUTOMATIC PHONOGRAPH RECORD PLAYERS

Carlo Sostero, c/o Seimart S.p.A. 10 Via Bistagno, Torino, Italy (10136)

Filed Sept. 17, 1973, Ser. No. 397,791
Claims priority, application Italy, Sept. 15, 1972, 29267/72
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **5 Claims**



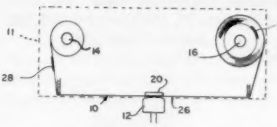
The specification describes a device for supporting phonograph records on the step of a long turntable spindle of an automatic record player, and for sequentially causing individual records to fall on said turntable for playing. The device comprise a long oscillatable arm located within said spindle, having an upper notched tip adapted to shifting the lowermost record in a stack located on said step, and desengaging it from said step, and a lower end portion cooperatively engaged in a control lever cooperating with the record layer program selection lever for phasedly oscillating said arm. The device is complemented with a separate body, designed for slidably fit on the upper portion of the spindle, over the record stack and designed for maintaining said stack horizontal and for latching said notched tip in its oscillated position when the last record of the stack has been caused to fall, for modifying the record player program. An ancillary member for adapting the device to manipulate large holed 45 r.p.m. records.

3,827,699

HEAD CLEANER FOR CASSETTE TAPES

Jerry Waugh, Lomita, Calif., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Dec. 7, 1972, Ser. No. 312,804
Int. Cl. G11b *5/40*
U.S. Cl. 274—47 **12 Claims**



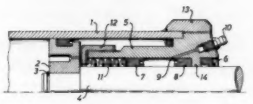
A cleaning leader for magnetic tapes comprising a plastic substrate and a non-abrasive coating having unoriented metal oxide particles dispersed through a binder, providing high and low spots on a surface of the coating.

3,827,700

SEALING DEVICE

Sigurd Kaller, Vadursgatan 2A, S-58245 Linkoping, Sweden

Filed Sept. 29, 1972, Ser. No. 293,718
Claims priority, application Sweden, Oct. 1, 1971, 12427/71; Aug. 29, 1972, 11105/72
Int. Cl. F16j *15/40*
U.S. Cl. 277—59 **4 Claims**



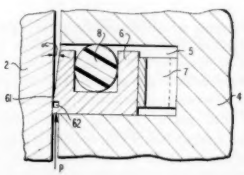
A sealing arrangement for a high pressure gas cylinder closed at one end by a slideable piston. An annular space between the piston and cylinder carries opposing sealing members with facing sealing lips. Oil in the cavity between the sealing members is kept under pressure by the expansive force of the gas in the cylinder. The oil pressure is always maintained higher than the gas pressure by either a spring urging the sealing members together, or a stepped construction whereby the reactive area of the cavity is less than the active area between the piston and cylinder.

3,827,701

OIL SEAL FOR USE IN ROTARY PISTON INTERNAL COMBUSTION ENGINE

Hiroshi Sakamaki, Utsunomiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1972, Ser. No. 241,937
Claims priority, application Japan, Apr. 8, 1971, 46-25834
Int. Cl. F01c *19/00*
U.S. Cl. 277—81 P **2 Claims**



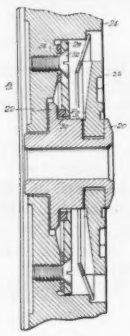
An oil seal for use in a rotary piston internal combustion engine which has at least one annular groove provided on an an-

nular sliding face formed with an axial outer surface of the oil seal and adjacent to and facing an inside wall face of a side housing of the engine.

3,827,702
UNIDIRECTIONAL DIAPHRAGM FACE SEAL

Olgierd S. Winiarz, Granada Hills, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 18, 1972, Ser. No. 227,358
Int. Cl. F16j *15/36*
U.S. Cl. 277—88 **1 Claim**

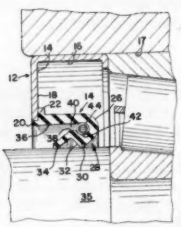


A flexible diaphragm mounted seal operative in response to the differential pressure across the diaphragm.

3,827,703
RADIAL SHAFT SEAL WITH POSITIVE GARTER SPRING RETENTION

Robert V. Brink, Carpentersville, Ill., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.

Filed July 23, 1971, Ser. No. 165,058
Int. Cl. F16j *9/06*
U.S. Cl. 277—153 **1 Claim**

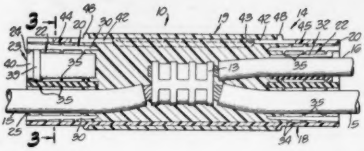


A shaft seal having a radially acting garter spring disposed in a relatively shallow spring-retaining groove which extends radially from one side wall of a relatively narrow, axially extending annular recess in the elastomeric body portion of the seal unit. The invention substantially reduces or eliminates "pop-out" of the garter spring, without diminishing the tolerance of the seal to radial run-out. In addition, seals of the present invention are able to be made by a method which reduces or eliminates the incidence of actual or potential splits in the outer wall of the spring-retaining groove, which in the prior art, resulted from excessive seal distortion occurring in newly formed seals during axial separation of the mold parts.

3,827,704
SEALING GROMMET AND PLUG FOR USE WITH ELECTRICAL CABLING

George W. Gillemot, 2331 20th St., Santa Monica, Calif. 90405, and John T. Thompson, 244 Loring St., Los Angeles, Calif. 90024

Division of Ser. No. 263,551, June 16, 1972. This application May 23, 1973, Ser. No. 363,075
Int. Cl. F16j *9/00*; **H02g** *15/18*
U.S. Cl. 277—209 **13 Claims**

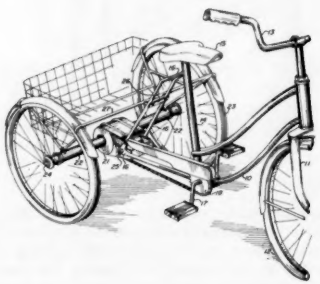


A sealing grommet and detachable plug for use in providing a fluid-tight seal between an electrical cable and the wall of a housing or the like. The grommets are formed of soft elastomeric material having outwardly projecting flexible ribs adapted to have sealing engagement with an opening seating the grommet. One or more passages through the grommet are appropriately sized to accommodate a cable and preferably include inwardly projecting flexible sealing ribs. The grommet is preferably slit lengthwise of one side to permit assembly of the grommet about a cable from the side of the cable. Cables of different size are accommodated by providing a set of concentric grommets which internest and one or more of which may be detached as necessary to provide a snug seal for a particular size cable. When a cable is not present the smallest grommet of the assembly is closed by a solid plug.

3,827,705
TRICYCLE DRIVE TRAIN

Raymond E. Templeton, 11144 Kolina Ln., Sun City, Ariz. 85351

Filed Dec. 11, 1972, Ser. No. 313,987
Int. Cl. B62k *13/04*
U.S. Cl. 280—7.15 **1 Claim**



An improved drive train is provided for a tricycle having a front steering wheel and two rear driven wheels, the tricycle including a pedal crank for generating motive power and a drive train for transferring the motive power from the pedal crank to the driven wheels. The improvement comprises in cooperative combination a differential gear for applying motive power equally to each of said driven wheels and coaster brake means for selectively transmitting the motive power to the driven wheels.

In one embodiment, the motive power from the pedal crank is transmitted directly through a chain-sprocket combination

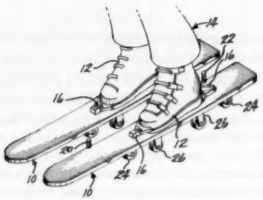
to a single conventional bicycle coaster brake. The motive power is then selectively transmitted from the coaster brake to a differential gear assembly which, in turn, drives a pair of rear axles having conventional front bicycle wheels directly attached to the outer ends thereof.

In another embodiment, power from the pedal crank is transmitted through a chain-sprocket assembly directly to a differential gear assembly which drives a pair of power transmission shafts having sprocket gears mounted on the outer ends thereof. Motive power is transmitted from each of the shaft-mounted sprockets through a drive-chain to a coaster brake assembled integrally in a conventional rear bicycle wheel.

3,827,706
WHEELED SKIS

Pierce D. Milliman, 603 34th Ave. E., Seattle, Wash. 98102

Filed Sept. 11, 1972, Ser. No. 287,749
Int. Cl. A63c *17/04*
U.S. Cl. 280—11.1 BT **6 Claims**

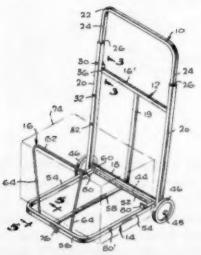


A wheeled ski adapted for travel on a ground surface, such as a paved roadway, in a manner to closely simulate actual maneuvers and conditions of conventional snow skiing. There are two ski members, each having a forward and rear turning and sliding wheel located on the longitudinal center axis of the ski, and two sets of tracking wheels located on opposite sides of the ski member intermediate the forward and rear turning and sliding wheels. The tracking wheels each rotate about a horizontal transverse axis substantially fixed with respect to the longitudinal center line of the ski, while each of the turning and sliding wheels has a caster type mounting, in that the horizontal rotating axis of the wheel is spaced horizontally from a vertical axis about which a mounting for the wheel rotates. This particular combination of wheel elements on the ski members provides close simulation for the user of maneuvers performed in conventional snow skiing.

3,827,707
PORTABLE CARRIER

Jacob Bierman, 313 Cochran Ave., Los Angeles, Calif. 90036

Filed Dec. 26, 1972, Ser. No. 318,697
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 C **10 Claims**

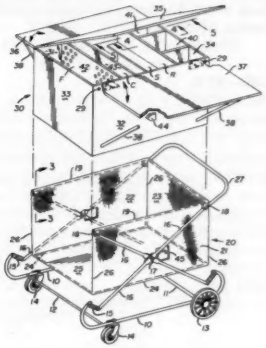


A portable carrier is described comprising a back support member, a bottom support member for conveying luggage, packages and the like, pivotally mounted at the lower end of the back support member, and a front support member pivotally mounted at the forward end of the bottom support member, a handle connected to the back support member which can be adjusted as desired, and a pair of wheels mounted at the lower extremity of the back support member for mobility of the carrier. The portable carrier is designed so that the front support member can be pivoted downwardly into engagement with the bottom support member, and the bottom support member, with the front support member in nested position thereagainst, in turn pivoted upwardly into engagement with the back support member, whereby the carrier in such inoperative nested substantially planar condition, occupies a minimum of storage space, and in such condition is readily portable.

3,827,708
PORTABLE PICNIC CART

Juanita Derry, 2009 W. Washington St., New Castle, Pa. 16101

Filed Aug. 23, 1973, Ser. No. 391,001
Int. Cl. B62b *1/20*
U.S. Cl. 280—36 R **6 Claims**



A portable picnic cart includes a wheeled, foldable frame having a flexible carrier suspended therefrom and a removable chest, part of which is refrigerated, normally disposed therein. The top portion of the chest together with a pair of sidewardly extensible leaves form a table top and means on the wheeled foldable frame engage the removable chest when in position therein so that the chest holds the wheeled, foldable frame in upright position.

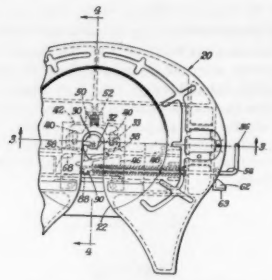
3,827,709
FIFTH WHEEL COUPLING

Francis Eli Madura, Whiting, and John Allan Kent, Chesterton, both of Ind., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Mar. 28, 1973, Ser. No. 345,533
Int. Cl. B62d *53/12*
U.S. Cl. 280—434 **9 Claims**

A fifth wheel coupling comprises a king-pin follower engageable with a bottom flange on a king-pin as it moves into a slot of a fifth wheel plate whereby the follower releases a lock which is spring-biased to locked position whereat a rear jaw

confines the king-pin against a front jaw of the plate. The lock engages the rear jaw along complementary wedge surfaces



which in conjunction with an elongated pivot pin hole in the rear jaw ensures snug fit of the king-pin within the jaws despite worn condition of the parts.

3,827,710

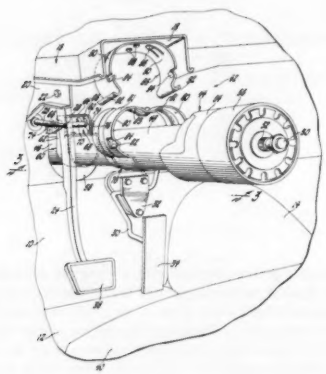
VEHICLE STEERING COLUMN INSTALLATION

Lehman J. Connell, Frankenmuth, and Lyle H. Durkee, Hemlock, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 25, 1973, Ser. No. 373,162

Int. Cl. B62d *1/18*

U.S. Cl. 280—87 R **4 Claims**



A vehicle steering column installation including a collapsible steering column assembly and an improved arrangement for supporting the latter on the body portion of the vehicle, the improved supporting arrangement including a collar on a lower mast jacket section of the column assembly engaging a rigid bar on the body portion to support the column assembly on the body portion for pivotal movement to a fully installed position, a keeper on the upper mast jacket section defining a pair of integral spring biased retaining fingers, and a striker on an upper mast jacket section of the column assembly defining a pair of bearing surfaces. The striker engages the keeper during pivotal movement of the column assembly toward the fully installed position to separate the retaining fingers which automatically engage the bearing surfaces when the column assembly achieves the fully installed position thereby to retain the column assembly in the fully installed position.

3,827,711

FRONT WHEEL SUSPENSION FOR A PASSENGER MOTOR VEHICLE

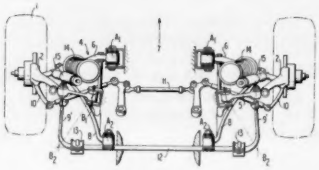
Alf Muller, Bittenfeld, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 15, 1973, Ser. No. 388,656

Claims priority, application Germany, Dec. 30, 1972, 2264278

Int. Cl. B62d *7/20*

U.S. Cl. 280—96.2 B **12 Claims**



A front wheel suspension for motor vehicles which includes a steering system disposed essentially to the rear of a vehicle cross plane containing the wheel centers that contains a steering linkage and a steering gear, as well as a wheel guide system formed by double cross guide members which include each a forward guide arm extending substantially in the vehicle cross direction and a rear guide arm forming the longitudinal support of the suspension; the cross guide members are elastically connected to the vehicle superstructure in points of pivotal connection which form a wide support base; the steering axis of the wheels which is determined by the points of pivotal connection of the cross guide members with the wheel carrier thereby extends obliquely downwardly and forwardly and intersects the vehicle cross plane containing the wheel centers intermediate the wheel center and the point of contact of the wheel and is so inclined in relation to the respective wheel plane that a steering roll radius results which is equal to or smaller than zero.

3,827,712

STRUCTURAL FRAME CAPABLE OF ABSORBING IMPACT ENERGY

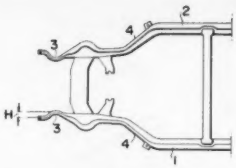
Ichiro Suzuki, and Hiroyuki Watanabe, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Oct. 31, 1972, Ser. No. 302,549

Claims priority, application Japan, Dec. 8, 1971, 46-99271

Int. Cl. B62d *21/00*

U.S. Cl. 280—106 R **4 Claims**



A structural frame capable of absorbing impact energy comprises structural frame member of metallic material defining closed rectangular cross-section. Portion of each of the structural frame members is bent in the direction perpendicular to the longitudinal direction of the frame and energy absorption materials of metallic material with bowl-shaped projections are attached to those two opposing inner surfaces of the frame members which oppose in the direction of bending so that the bowl-shaped projection abut against each other.

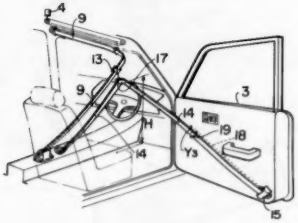
Upon collision, due to the resistance to plastic deformation of the bowl-shaped deformation the shape of the cross section of the structural frame may be maintained in its initial state and no abrupt decrease of blending moment takes place.

3,827,713

PASSIVE SEAT BELT ASSEMBLY FOR AUTOMOBILE OR THE LIKE

Katsuo Sakurai, Toyota, and Jiro Chofuku, Yokosuka, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Dec. 5, 1972, Ser. No. 312,321
Claims priority, application Japan, Dec. 8, 1971, 46-99272
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **2 Claims**



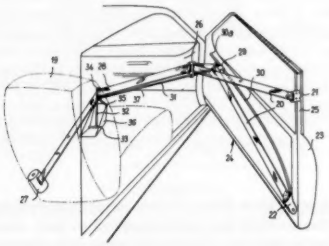
A passive seat belt for an automobile or the like. A shoulder belt is linked to a guide assembly which, in turn, is linked to a drive means actuated in response to open-close operation of a door and which is mounted on the roof side rail so that it reciprocates to and fro along the rail, and a wrap belt is linked to a guide means mounted at a suitable position on the shoulder belt. Both belts take restrictive positions where passenger is constrained and non-restrictive positions in response to closing and opening of the door.

3,827,714

AUTOMATIC TENSIONING AND RELEASE DEVICES FOR AUTOMOTIVE SAFETY HARNESSES

Andre Lefeuvre, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Oct. 31, 1972, Ser. No. 302,548
Claims priority, application France, Nov. 10, 1971, 71.40357; May 17, 1972, 72.17653
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **5 Claims**



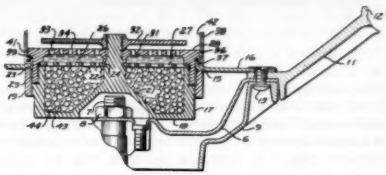
This device for retracting and restoring to an operative position the safety harnesses for the passengers of a motor vehicle comprises a safety harness consisting essentially of a strap, a pair of anchoring point for said strap which are disposed at different levels on the vehicle door and spaced laterally in relation to the seat adjacent to said door, a buckle slidably fitted on said strap, a first traction element secured to said buckle, a winder for said traction element secured to the passengers compartment at floor level, a strap guide element movable in relation to a fixed guide element and a second traction element for pulling said movable guide element, wherein one end of said second traction element is rigid with a fixed point of the passengers compartment and the other end is rigid with said movable guide element, the sliding buckle being also slidably mounted on said second traction element.

3,827,715

PYROTECHNIC GAS GENERATOR WITH HOMOGENOUS SEPARATOR PHASE

Robert W. Lynch, Fountain Valley, Calif., assignor to Specialty Products Development Corporation, Cleveland, Ohio

Filed Apr. 28, 1972, Ser. No. 248,738
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **14 Claims**



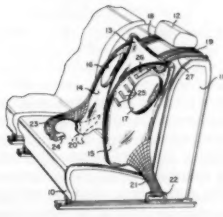
A pyrotechnic gas generator in an automobile passenger restraint bag system is described. The preferred arrangement in the automobile steering wheel inflates a driver restraint bag in about 25 milliseconds with a deflagration granular propellant of low net heat output. To raise the burn rate for the cool propellant an inert non-crushable solid separator phase such as steel balls is uniformly dispersed in the propellant and immobilized for inhibiting segregation of the propellant and separator phase. In one embodiment the gas generator cavity is completely filled with steel balls having the granular propellant dispersed therebetween. The separator phase also withdraws heat from the resultant gas and freezes out non-gaseous reaction products.

3,827,716

SAFETY VEST

Rudolph Marion Vaughn, 2172 Salt Air Dr., Santa Ana, Calif. 92705, and David M. Harney, 3010 Country Club Dr., Glendale, Calif. 91208

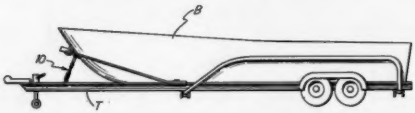
Filed Apr. 11, 1973, Ser. No. 350,032
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **5 Claims**



A safety vest for use in an automobile seat includes a back and right and front panel portion having right and front armholes respectively. The upper edge of the back is secured to

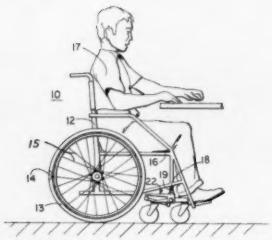
the back seat of the automobile and the lower right and left hand portions of the front panels are secured on lower sides of the seat. A single fastening strap extends diagonally from the lower right hand portion of the right front panel to the upper left hand portion of the left front panel and is held in place by a magnet within a slot structure for receiving a hook on the end of the fastening belt. Inflatable means responsive to a force greater than 4 g's is arranged to be actuated in front of a person's face for protection in the event of a crash.

3,827,717
PROW TIE-DOWN DEVICE FOR BOAT TRAILERS
William P. Whitley, Jr., 4525 E. 10th Ln., Hialeah, Fla. 33013
Filed Jan. 15, 1973, Ser. No. 323,534
Int. Cl. B60p *7/08*
U.S. Cl. 280—179 R **3 Claims**



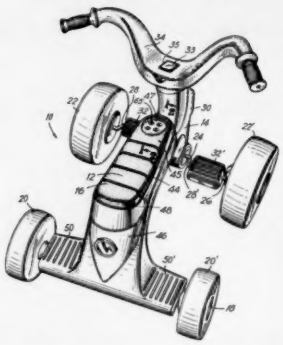
A tie-down device for yieldingly attaching the prow of a boat to the framework of a boat trailer so as to minimize relative movement therebetween during trailering, is described. A single-acting hydraulic unit is connected in tandem with helical tension springs and in series with a turnbuckle; and attachment means is provided at each end for connection between the winch eye at the prow of a boat and the framework of the boat trailer on which the boat is cradled. The device is slow acting in the direction of expansion due to the dampening effect of the hydraulic unit, while at the same time affording quick return to normal, withdrawn position upon the release of stress, thereby minimizing bouncing of the boat on the trailer while being trailered over rough terrain.

3,827,718
WHEEL CHAIR
Paul F. Curry, 1281 Middletown-Eaton Rd., Middletown, Ohio 45042
Filed May 30, 1973, Ser. No. 365,124
Int. Cl. B62b *5/04, 9/02*
U.S. Cl. 280—242 WC **5 Claims**



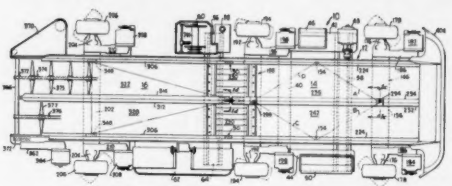
A wheel chair having a main framework supported by a pair of spaced main wheels rotatably mounted adjacent a rear portion thereof, and by casters carried by a pair of spaced housings mounted adjacent opposite ends of a front portion thereof. A swinging frame is pivotally mounted on each housing. A pair of caster supports is pivotally mounted on each swinging frame on opposite sides of the pivot thereof. Casters are rotatably mounted on the caster supports to support the front portion of the wheel chair. A stop bar is mounted on each of the housings and extends transversely of the swinging frame in the path of one of the casters on the swinging frame so that if the other caster on that swinging frame moves over an edge of a step, that one of the casters engages the stop bar to arrest movement of the wheel chair.

3,827,719
TOY CYCLE CONSTRUCTION
Raymond J. Lohr, and James Smith, both of Erie, Pa., assignors to Louis Marx & Co., Inc., New York, N.Y.
Filed Oct. 2, 1972, Ser. No. 294,127
Int. Cl. B62m *1/02;* **B62k** *5/08*
U.S. Cl. 280—259 **6 Claims**



A toy cycle in which the front wheel assembly is pivotably connected to the vehicle body for steering the vehicle and the pair of wheels carried by the front wheel assembly are mounted on a drive shaft journalled in the assembly, one wheel being drivable thereby. A pair of driving pedals are mounted on the drive shaft for driving the drive shaft to drive the drive wheel forwardly. Pivotal connecting means between the front wheel assembly and vehicle body are positioned rearwardly of the drive shaft whereby the vehicle has a small turning radius without cramping a driver's leg movement on the driving pedals.

3,827,720
ARTICULATED HAULAGE VEHICLE
Arthur L. Lee, 2050 Tremont, Columbus, Ohio 43221
Filed Apr. 4, 1973, Ser. No. 347,644
Int. Cl. B60d *1/00*
U.S. Cl. 280—400 **11 Claims**



The haulage vehicle has a frame member with separate front and rear sections that are connected to each other by universal means and are free to articulate in a plurality of planes. The frame rear section has a transversely mounted rear axle adjacent the rear portion on which a pair of propelling wheels are mounted and a transversely mounted intermediate axle adjacent the front portion of the frame rear section on which a pair of intermediate propelling wheels are mounted. The frame front section has a transversely mounted

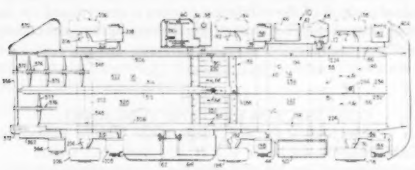
front axle on which a pair of front propelling wheels are mounted. Separate propelling motors are mounted adjacent each of the propelling wheels and are drivingly connected to the adjacent propelling wheel. All of the propelling wheels are steerable and the drive motors are movable therewith. A body member is supported on the frame rear section and a boom member is supported on the frame front section. The boom member is connected to the body member by a plurality of longitudinally extending flexible plates, so that the boom and body members are free to articulate in a plurality of planes. Endless conveying means are positioned in the longitudinal haulage compartment formed by the body and boom members. With this arrangement, all of the propelling wheels on the haulage vehicle remain in contact with the ground as the haulage vehicle moves over uneven terrain and the haulage vehicle follows the contour of the uneven terrain.

3,827,721

ARTICULATED HAULAGE VEHICLE

Arthur B. Coval, 180 E. Domnion Blvd., Columbus, Ohio 43214

Filed Apr. 4, 1973, Ser. No. 347,645
Int. Cl. B60d *1/00*
U.S. Cl. 280—400 **8 Claims**



The haulage vehicle has a frame member with separate front and rear sections that are connected to each other by universal means and are free to articulate in a plurality of planes. The frame rear section has a transversely mounted rear axle adjacent the rear portion on which a pair of propelling wheels are mounted and a transversely mounted intermediate axle adjacent the front portion of the frame rear section on which a pair of intermediate propelling wheels are mounted. The frame front section has a transversely mounted front axle on which a pair of front propelling wheels are mounted. Separate propelling motors are mounted adjacent each of the propelling wheels and are drivingly connected to the adjacent propelling wheel. All of the propelling wheels are steerable and the drive motors are movable therewith. A body member is supported on the frame rear section and a boom member is supported on the frame front section. The boom member is connected to the body member by a plurality of longitudinally extending flexible plates, so that the boom and body members are free to articulate in a plurality of planes. Endless conveying means are positioned in the longitudinal haulage compartment formed by the body and boom members. With this arrangement, all of the propelling wheels on the haulage vehicle remain in contact with the ground as the haulage vehicle moves over uneven terrain and the haulage vehicle follows the contour of the uneven terrain.

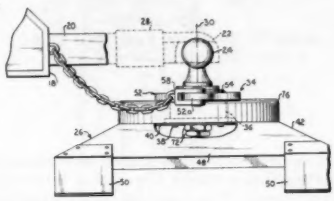
3,827,722

SAFETY CHAIN ATTACHMENT FOR ROOF-MOUNTED TRAILER HITCH

Dennis D. Miller, and Jerry W. Karr, both of Warrensburg, Mo., assignors to Harmon Industries, Inc., Grain Valley, Mo.

Filed Jan. 8, 1973, Ser. No. 321,864
Int. Cl. B62d *53/10*
U.S. Cl. 280—432 **4 Claims**

A hitch assembly which connects the tongue of a trailer and one or more safety cables or chains to a towing vehicle, wherein relative rotation of the vehicle and trailer about the hitch axis is permitted without interference. The assembly includes a safety coupling device for the safety chains, such device having a fixed hub coaxial with the hitch axis and a rotatable element supported on the hub for rotation thereon. The element includes a pair of opposed, radially outwardly extending, horizontal arms to which two safety chains are connected that extend from the trailer body. The hub is secured by fasteners directly to the supporting structure of the hitch



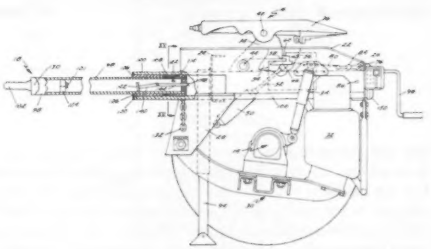
assembly independently of the hitch ball or other hitch component, so that failure of the primary hitch does not affect the safety coupling. The arrangement is particularly advantageous in roof-mounted hitches where the vehicle and trailer are capable of unlimited relative rotation, in that the arms rotate with the trailer as the latter and the vehicle undergo relative rotation to prevent the safety chains from interfering with the free movement of either the vehicle or the trailer about the hitch axis.

3,827,723

DOLLY FOR TRACTOR TRAILERS

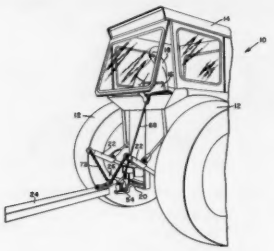
Charles G. Neff, Saratoga, Calif., and William F. Beebe, Holland, Mich., assignors to Holland Hitch Company, Holland, Mich.

Filed Nov. 30, 1972, Ser. No. 310,892
Int. Cl. B62d *53/02*
U.S. Cl. 280—476 R **14 Claims**



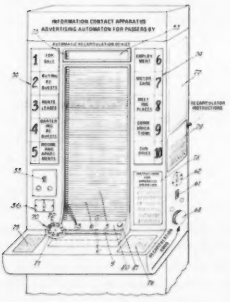
A convertible dolly assembly having an elevatable fifth wheel and a specially locked, telescopically mounted drawbar. The dolly may be employed as a tandem axle on a tractor by lowering the fifth wheel, retracting the drawbar and fitting the drawbar and its supporting structure into a sleeve having locking means therein positioned at the rear of the tractor. Special cooperating locking means on the drawbar and the tractor include a rotatably engageable lock coupling on the end of the drawbar and a cooperable lock coupling in a sleeve mount on the tractor. For use as a towing dolly to pull a second trailer, the drawbar is rotated 90° thereby unlocking it and allowing it to be extended. Once extended, it is again rotated 90° to lock it in extended position. The fifth wheel can be locked in its raised position by a pair of special locking and support keepers slidably mounted on the frame.

3,827,724
COUPLING DEVICE
John William Ackley, Moline, Ill., assignor to Deere & Company, Moline, Ill.
Filed Feb. 16, 1973, Ser. No. 333,315
Int. Cl. B60d 1/04
U.S. Cl. 280—511 8 Claims



A remotely actuatable coupling device having a ball hitch mounted on an agricultural tractor is adapted to accommodate different type hitch-engaging means carried by the tongue of the towed implement. Raising and lowering of the implement tongue is accomplished by the movement of a pick-up bale suspended from the pivotal draft links of the tractor. A keeper, mounted on the tractor and which can be controlled from the operator's station, releasably locks the engaging means to the ball hitch.

3,827,725
INFORMATION DEVICE
Alfred Fuetsch, Schulhausstrasse 636, CH-8307 Tagelswangen, Switzerland
Filed Sept. 25, 1972, Ser. No. 292,026
Claims priority, application Switzerland, Sept. 30, 1971, 14334/71
Int. Cl. B42d 19/00
U.S. Cl. 281—8 10 Claims

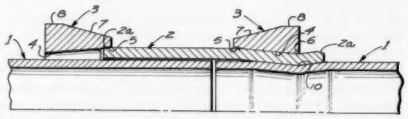


The invention provides an information device comprising a casing including a viewing window and a closable writing aperture, means for supporting in said casing material to receive inscriptions, a take-up means to receive said inscription material after passage past the writing aperture and the viewing window, means for temporarily opening the writing aperture, and means for shifting the inscription material past said aperture and said viewing window.

3,827,726
IDENTIFICATION CARDS
Robert A. McVoy, Melrose, and Ronald R. O'Connor, Bedford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed May 2, 1972, Ser. No. 249,532
Int. Cl. B42d 15/00
U.S. Cl. 283—7 8 Claims

Identification cards including I. D. credit cards comprising a sheet material bearing a photographic image pattern preferably prepared by diffusion transfer processes. A portion of the photographic image pattern provides a security feature and comprises a partial or imcomplete portion of a predetermined validation pattern. The predetermined validation pattern becomes apparent when another medium containing the residual portion of the validation pattern is superposed on the partial pattern which is part of the photographic information stored on the information-bearing surface.

3,827,727
CONSTRICTOR RING AND TUBE JOINT
Kurt O. Moebius, P.O. Box 2625, Palos Verdes Peninsula, Calif. 90274
Continuation of Ser. No. 876,682, Nov. 14, 1969, abandoned.
This application June 26, 1972, Ser. No. 266,055
Int. Cl. F16l 13/14
U.S. Cl. 285—27 13 Claims

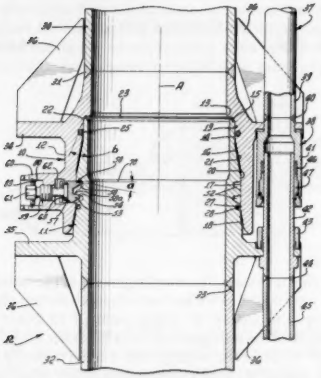


A constrictor ring and tube joint formed thereby in which the constrictor ring is provided with a tapered bore and which is also tapered externally in such a manner that the end having the smaller internal diameter also has the greater external diameter. The constrictor ring is internally dimensioned to be partially received on a collar or coupling connecting the ends of two tubes placed in abutment or the enlarged or bell end of a tube which receives the plain end of a mating tube and then is forced over the collar or bell end to cause local annular compression of the collar or bell end sufficiently to cause corresponding annular compression of the tube within and produce a high strength fluid tight tube joint.

3,827,728
PIPE CONNECTORS
Joseph H. Hynes, Ojai, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Oct. 30, 1972, Ser. No. 301,840
Int. Cl. F16l 15/00
U.S. Cl. 285—90 14 Claims

A connector particularly useful in securing sections of an underwater oil well marine riser together, including a pin member received in a box member, the pin and box members being secured together by a plurality of lock dogs, or the like,

in the box member forced radially inwardly within a groove in the pin member, the groove and dogs having coengaging cam surfaces exerting an axial thrust between the pin and box members, compressing the pin member against the box in



metal-to-metal sealing contact, the pin member being retained in compression to store energy therein and compensate for tensile loads imposed on the pin member so as to maintain the metal-to-metal sealing contact.

3,827,729

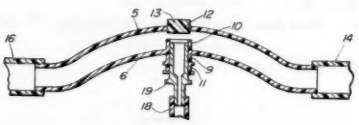
ADAPTER FOR USE WITH TRACHEAL TUBES

Jack M. Kamen, 440 Tippecanoe Pl., Gary, Ind. 46403

Filed July 3, 1972, Ser. No. 268,609

Int. Cl. A61m *25/00, 16/00*

U.S. Cl. 285—121 **9 Claims**



An adapter for use with trachael tubes, and embodying a connector for such tracheal tubes disposed in the central portion of an elongated portion of the adapter, with the connector extending a substantial distance into the central portion in a direction transverse to the length thereof and disposed in elevated position relative to the ends of the aforementioned elongated portion so as to protect against the accidental discharge of liquid into a tracheal tube connected to the adapter.

3,827,730

WASTE FOOD DISPOSER MOUNTING ASSEMBLY

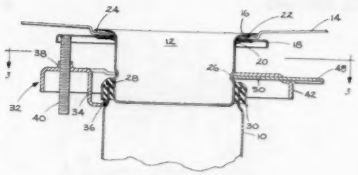
Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 28, 1972, Ser. No. 292,970

Int. Cl. F16l *3/04*

U.S. Cl. 285—159 **6 Claims**

A sink mount support assembly for a waste food disposer includes a connecting member which contains a slidable locked member for attaching the connecting member to a sink drain sleeve. The connecting member, which is attached to the upper end of a disposer hopper, is axially aligned and lifted toward its installed position on a sink drain sleeve with the locking member in an unlocked position. When positioned on the sink sleeve, the locking member is placed in a locked position by circumferentially moving a handle attached to the member. Movement of the handle causes a cam surface on the connecting member to engage a cam on the locking member thereby causing the locking member to move radially inward toward the surface of the sink sleeve and into a circumferential locking slot thereon. This places the disposer in a first



rotatable position on the sink sleeve wherein it can be axially manually rotated to align with plumbing fittings. Thereafter, by tightening set screws, the hopper of the disposer is sealed in drain flow communication with the sink sleeve and the disposer is firmly positioned whereby axial rotation is prevented. The assembly is disconnected by reversing the above procedure.

3,827,731

EXPANSION JOINT FOR TUBULAR INSULATING GAS-FILLED ENCLOSURE FOR HIGH-VOLTAGE CONDUCTOR

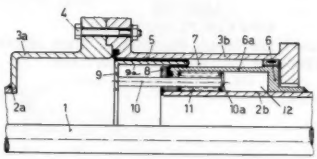
Carl Dieter Floessel, Fislisbach, and Klaus Floessel, Wettingen, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 19, 1973, Ser. No. 352,669

Claims priority, application Switzerland, May 4, 1972, 6609/72

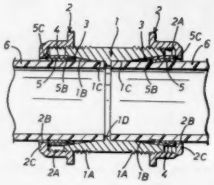
Int. Cl. F16l *55/00*

U.S. Cl. 285—187 **4 Claims**



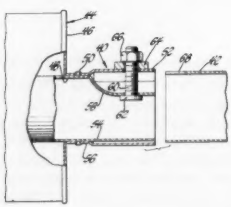
An expansion joint housing structure connecting the end portions of tubular sections of an enclosure for an electrical conductor supported concentrically therein in which the end of one section of the enclosure is rigidly connected to the joint housing structure while the end of an adjacent section of the enclosure is entered into the joint housing structure and fitted with a piston for longitudinal movement relative thereto in response to expansion and contraction of the enclosure due to the heating effect of the conductor current. A flexible sleeve membrane turned back upon itself is located in an annular gap formed between a part of the piston and the inner surface of the joint housing structure which serves as the piston cylinder, and functions as a seal between the relatively movable parts of the expansion joint. To prevent the membrane from turning completely inside-out while the enclosure is evacuated during the assembly process of the conductor within the enclosure, and prior to filling with the insulating gas, a support ring for it is provided, this ring including a cylindric portion enterable into the gap formed at the turned-back end of the membrane, and being mounted on the piston for movement in a longitudinal direction relative thereto by means including loading springs which load the support ring in the direction of the turned-back end of the membrane.

3,827,732
PIPE JOINT ASSEMBLY
Masaaki Noguchi, Nagoya, and Takezo Kawahara, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed Nov. 27, 1972, Ser. No. 309,784
Claims priority, application Japan, Dec. 4, 1971, 46-114286
Int. Cl. F16l *19/08*
U.S. Cl. 285—342 6 Claims



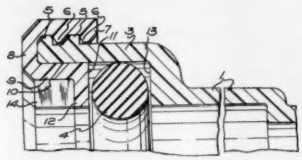
Disclosed herein is a pipe joint assembly which comprises a joint body member to hold the jointing end of a pipe therein, a fastening nut to be threaded on the body member, a lock ring protector provided with a plurality of flaps at its inner end and coupled with the outer circumference of the pipe to be positioned between the inner wall of a radial collar portion of the nut and a tapered portion formed within the body member, a lock ring member coupled with the lock ring protector to be positioned between the inner wall of the radial collar portion and the tapered portion, and a seal ring coupled with the pipe in a space between the tapered portion and the outer circumference of the pipe. The seal ring is in contact with the inner end of the lock ring member at its one end. In clamping the nut over the body member, the seal ring is deformed by way of the lock ring member to form the sealing between the body member and the pipe, and the flaps of the lock ring protector pierce into the pipe.

3,827,733
PIPE COUPLING UNIT
Thomas R. Cassel, 226 Shirley, Birmingham, Mich. 48009
Filed June 29, 1972, Ser. No. 267,344
Int. Cl. F16l *21/00*
U.S. Cl. 285—382.2 11 Claims



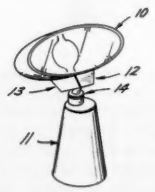
A coupling device for pipes is disclosed which provides strong mechanical connection and fluid sealing without the requirement of close tolerances in the dimensions of the pipes to be connected. A coupling device comprises inner and outer sleeves with an annular space therebetween adapted to receive the end of a pipe to be joined. A coupling device may be double ended and adapted to accept a pipe to be joined at each end or it may be single ended and adapted to accept a pipe at one end only. Force exerting means suitably in the form of a threaded fastener coact with the inner sleeve for expanding at least a portion thereof radially whereby the end of a pipe inserted between the sleeves will be squeezed therebetween to form the joint.

3,827,734
PIPE COUPLINGS
Kenneth Brown, Edlington, England, assignor to Hipworth Plastics Limited, Sheffield, England
Filed Feb. 26, 1973, Ser. No. 335,724
Claims priority, application Great Britain, Jan. 27, 1973, 4283/73
Int. Cl. F16l *17/00*
U.S. Cl. 285—379 5 Claims



A sealing ring is retained in an enlargement at the outer end of a plastics pipe coupling socket by a channel-section plastics retaining ring with snap-over engagement of its outer limb with the outside of the enlargement, with the inner limb fitting closely to the inside of the enlargement and terminating in an annular face having a radial extent substantially equal to the radial extent of an inner end face of the enlargement and spaced therefrom by at least the axial thickness of the sealing ring, the close fit of the inner limb of the retaining ring to the inside of the enlargement ensuring that the retaining ring will not twist off under pressure from within the socket, while the snap-over engagement prevents the retaining ring being pushed off.

3,827,735
APPARATUS FOR HOLDING PARTS BETWEEN WHICH WIRING IS TO EXTEND IN SELECTED PIVOTAL POSITIONS WITH RESPECT TO ONE ANOTHER
Ralph M. McFarlin, Pasadena, Tex., assignor to Esquire, Inc., New York, N.Y.
Filed June 18, 1973, Ser. No. 370,694
Int. Cl. F16c *11/00*
U.S. Cl. 403—113 8 Claims

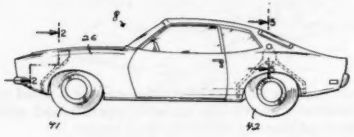


There is disclosed apparatus for mounting a light fixture in selected pivotal positions on and with respect to a base through which wiring from the fixture is to extend.

3,827,736
HEATED, VIBRATORY TRACK SANDER
Silvio D. Mango, 55 Carleton Ter., Cresskill, N.J. 07626
Filed Jan. 11, 1973, Ser. No. 322,605
Int. Cl. B60b *39/06*, *39/10*; B61c *15/10*
U.S. Cl. 291—20 7 Claims

This invention in a preferred embodiment is directed to a truck or automobile having associated with at least one or more rear wheels, and preferably with also front wheels separate vessels, one for each wheel, actuateable by either brake or special actuation switch means or both to release vessel sand and/or salt contents through a directed outlet opening

in front of the respective tires, and also behind the rear tires, the mechanism being separate for each of the front-of-tires release and the behind-tires release as controlled by the gear shift lever such that the anti-skid composition or mixture will be released on the track or path behind the tires only when backing and otherwise only in front of the tires when the vehicle is geared for forward motion, each vessel including a heating means for maintaining temperatures thereof and the contents thereof in an above-freezing state and a vibrator associated with each vessel for facilitating gravity feed of solid



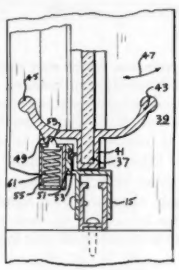
contents of the vessel down an inclined wall and out of the outlet of the vessel, the vessel being mounted on rubber mounting structure itself mountable onto the vehicle, the period of actuation and feed being for typically one cycle of a one-cycle motor connected for revolving a feed gate at each vessel outlet opening for thereby feeding a controlled amount per actuation by virtue of a coil induction switch remaining closed for continuing a closed circuit until the one motor-cycle is completed, there being a master switch for activating and deactivating the entire system's electrical circuitry.

3,827,737

SHOWER DOOR LATCH

Arnold O. Rystad, Lakeport, Calif., assignor to Work Right Products Inc., Hayward, Calif.

Filed Oct. 16, 1972, Ser. No. 297,924
Int. Cl. E05c *19/02*
U.S. Cl. 292—74 **1 Claim**



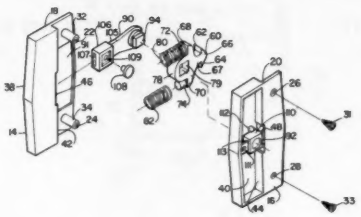
A latch for a shower door mounted on a shower door with one edge of the door hinged to the frame, with the other edge of the door extending to the opposite side of the frame. A handle means is secured to the moring edge thereof with the pull portions of the handle extending from opposite sides of the door. The pull portion of the handle extending from the side of the door facing inwardly toward the shower stall includes a lip or ridge portion projecting toward the opposed portion of the frame. A depressable detent or bolt means is mounted on the door frame so as to engage with the lip portion, whereby, when the door is closed, the latch means will be biased into contact with the lip portion to hold the door in the closed position.

3,827,738

LATCH ASSEMBLY

Raymond N. Dushane, Jr., Fullerton, Calif., assignor to Columbia Manufacturing Corporation, Los Angeles, Calif.

Filed Mar. 9, 1973, Ser. No. 339,922
Int. Cl. E05c *19/10*
U.S. Cl. 292—128 **16 Claims**



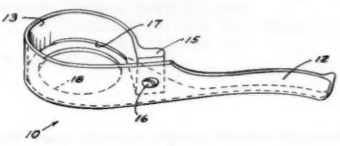
Herein described is a latch assembly for use in a sliding closure which includes an inside pull and an outside pull. A two-way spring loaded lock mechanism is disposed within the frame of the closure. Two actuating levers are in operable connection with the lock mechanism. One actuating lever is operable from the outside pull and the other actuating lever is operable from the inside pull.

3,827,739

LEVER ATTACHMENT FOR DOOR LATCH-OPERATING DEVICE

Loyal M. Overholser, 781 Briddlewood St., Dayton, Ohio 45430

Filed Jan. 22, 1973, Ser. No. 325,644
Int. Cl. E05c *21/00*
U.S. Cl. 292—347 **1 Claim**



Lever attachment for facilitating the opening of a door is releasably attached to a door knob. The door latch-operating mechanism is actuated merely by application of a downward pressure to the lever. The device comprises a lever portion, clamp portion, face portion, and a securing means for releasably connecting the attachment to door knobs of differing sizes and configurations.

3,827,740

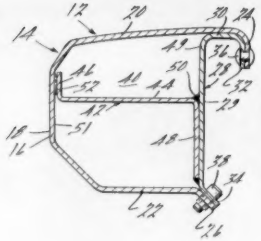
STRUCTURALLY REINFORCED VEHICLE BUMPER

Richard R. Golze, Bloomfield Hills, and Richard F. Kienle, Bloomfield Township, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,466
Int. Cl. B60r *19/04*
U.S. Cl. 293—98 **2 Claims**

A structurally reinforced vehicle bumper assembly comprising a plurality of outer members secured together to define a closed bumper configuration having an internal chamber. A

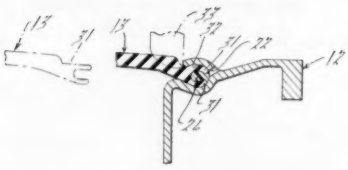
bumper reinforcing structural element is positioned within this chamber and is secured to and interconnects two outer members. This structural element is joined to one of these outer members by adhesive material, thereby permitting the assembly of the composite bumper.



3,827,741
RESILIENT BUMPER ASSEMBLY

Carl A. Howell, Livonia, and George H. Muller, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1973, Ser. No. 385,510
Int. Cl. B60r 9/08
U.S. Cl. 293—99 **9 Claims**



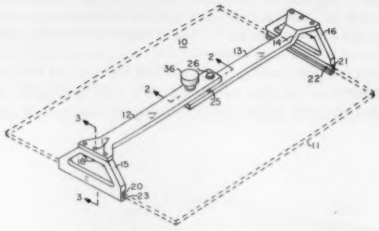
A resiliently deformable bumper assembly which includes an elastomeric outer shell attached to a rigid backing member. The shell is attached to upper and lower grooves formed in the backing member by means of beads received within the grooves. Each of the beads is formed by a rearward edge portion of the outer shell together with a strip of injected caulking material partially enclosed by the edge portion. The beads are preferably bulbous in cross sectional shape and conform generally to the interior contours of the respective grooves.

3,827,742
FIXTURE FOR HANDLING PANEL ARTICLES

Jimmie H. Holden, Rt. 1 Box 66, Athens, Ala. 35611

Filed May 7, 1973, Ser. No. 358,240
Int. Cl. B65g 7/12
U.S. Cl. 294—16 **6 Claims**

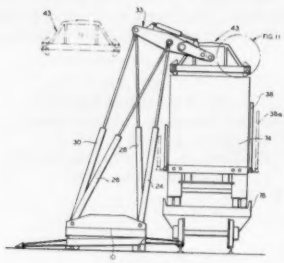
A fixture for gripping and handling fragile panel articles by their edges. The fixture includes a pair of bars disposed in slightly overlapped longitudinal relation. A transverse pivot pin is located between opposed bar faces intermediate the area of overlap, and the overlapped ends are adjustably secured to one another by clamping means on either side of the pivot pin. The other ends of the bars have attached thereto perpendicularly extending gripping members providing a pair of opposed gripping surfaces adapted to engage a panel by its edges. Movement of gripping surfaces together and apart is controlled by adjustment of the clamping means.



3,827,743
LOAD HANDLING APPARATUS

Peter J. Visser, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 30, 1972, Ser. No. 267,747
Int. Cl. B60p 1/48
U.S. Cl. 294—67 BB **12 Claims**



A load handling apparatus, which may form a part of a load transfer machine for handling semi-trailers, cargo containers and other large loads. The load handling apparatus includes a load handling device and an associated mechanism which are readily collapsible by remote control to dimensions sufficiently small that the load transfer machine may be mounted on a semitrailer or other vehicle for movement over public highways. At the same time, the load handling apparatus is readily erectable, also by remote control, so that it may be quickly prepared for the handling of large loads.

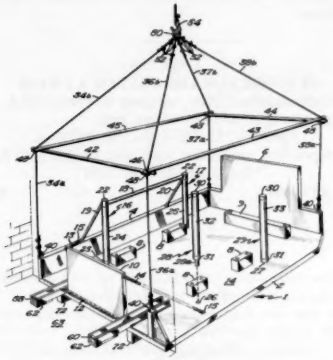
3,827,744
PROCESS AND APPARATUS FOR HANDLING BULK BUILDING MATERIALS AT CONSTRUCTION SITES

Lawrence Joseph Ferdelman, New Brighton; Joseph A. Peters, Wayzata, and Willard Elvin Peterson, Minneapolis, all of Minn., assignors to Wunder-Klein-Donohue Company, Minneapolis, Minn.

Filed Jan. 29, 1973, Ser. No. 327,832
Int. Cl. B66c 1/16
U.S. Cl. 294—67 E **9 Claims**

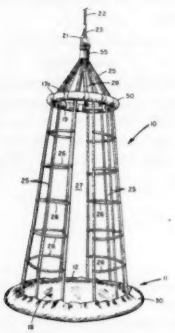
Bulk materials, such as wallboard panels, are carried to a desired floor level of a building under construction from a source of supply at the building site by loading the bulk material onto raised support members on the deck of a pallet carrier through an open side thereof by a mechanical lift device, hoisting the loaded pallet carrier to the desired floor

level of a building having a side wall opening, and engaging the outer edge of the building floor with friction padded support extensions projecting forwardly from the front end of the pallet carrier deck. A hinged ramp at the front end of the pallet carrier is then lowered against the building floor to permit a hand operated lift dolly to be rolled onto the carrier deck



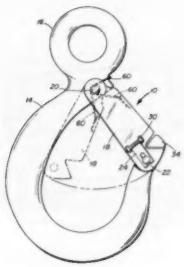
under the raised load to pick up the load of bulk material and deposit it on the building floor. Four lift cables extending from the corners of the pallet carrier are attached to the corners of a rectangular bar assembly, which, when held in an elevated position over the pallet carrier deck, holds the four lift cables in vertically extended positions wherein they do not interfere with the loading or unloading of the carrier.

3,827,745
PERSONNEL OR CARGO NET
Billy Gene Pugh, P.O. Box 802, Corpus Christi, Tex. 78403
Filed Nov. 15, 1972, Ser. No. 306,586
Int. Cl. B66c *1/12*
U.S. Cl. 294—77 **11 Claims**



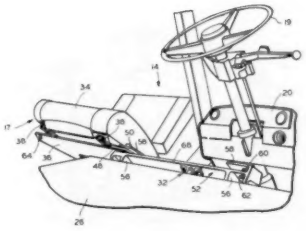
A personnel or cargo net has a cushioned base spreader ring which carries a padded load supporting platform for the net, a top pick-up ring, an upper spreader ring of smaller diameter than the base spreader ring between the pick-up ring and base spreader ring, a web-like sidewall having longitudinally extending, circumferentially spaced lacings secured to the spreader rings and looped through the pick-up ring, a cable for securing the pick-up ring to a hoist, lacings secured at one end to the pick-up ring and at the other end to the upper spreader ring and twisted along with the lacings which are looped through the pick-up ring in a direction opposite to the lay of the cable whereby any rotative forces of the cable are resisted by the twisted lacings and spinning of the net is avoided.

3,827,746
SAFETY LATCH FOR HOIST HOOK
Lewis C. Byers, 3 Fairfield Dr., Baltimore, Md. 21228
Filed Jan. 5, 1973, Ser. No. 321,241
Int. Cl. B66c *1/36*
U.S. Cl. 294—82 R **12 Claims**



A safety latch for a crane hook includes arm sections which are attached for movement to a shank of the hook adjacent to the mouth of the hook. Each arm has a spring biased pin which engages and seats in a related opening formed in the tip of the hook which facilitates the locking of the latch across the mouth of the hook after a load has been attached to the hook. Also, at the end of each arm section there is provided a notch which supports the enlarged point of the hook and prevents the point of the hook from catching in other objects. This notch keeps the point of the hook from bending outwardly under an extreme overload.

3,827,747
ADJUSTABLE SEAT FOR AN INDUSTRIAL TRUCK
Austin C. Cookes, Birmingham, England, assignor to Clark Equipment Company, Buchanan, Mich.
Filed Oct. 5, 1972, Ser. No. 295,411
Int. Cl. B60n *1/02*
U.S. Cl. 296—65 R **3 Claims**

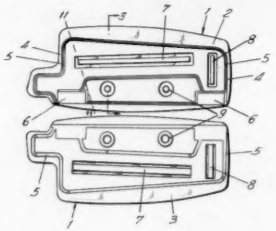


A device for biasing to a forwardly tilted position in an industrial truck a seat assembly of the type which can be swung outwardly from a forwardly facing operative position to a rearwardly facing non-operative position for the purpose of enabling easy removal and installation of storage batteries in electric fork trucks. The biasing device normally spring loads the seat assembly to said tilted position so as to facilitate such manipulation of the seat.

3,827,748
REINFORCED SUN VISOR, ESPECIALLY FOR MOTOR VEHICLES

Gerhard Herr, Wuppertal-Vohwinkel, and Willy O. Treber, Wuppertal-Elberfeld, both of Germany, assignors to Gebr. Happich GmbH, Wuppertal-Elberfeld, Germany

Continuation-in-part of Ser. No. 126,465, March 22, 1971, abandoned. This application Mar. 28, 1972, Ser. No. 238,794
Claims priority, application Germany, July 24, 1970, 2036772
Int. Cl. B60j *3/00*
U.S. Cl. 296—97 H **15 Claims**

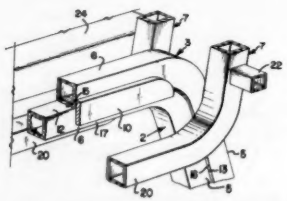


A reinforced sun visor comprising two superposed layers of foamed material sandwiching a wire reinforcing insert between them. In one embodiment the layers are held together at their edge by a foldable hinge. The facing surfaces of the layers are grooved to conform to the shape of the reinforcing insert and to receive the insert. The facing surfaces are in contact with each other while the insert is in place. One facing surface carries at least one projection and the other includes a correspondingly positioned and shaped depression. These elements cooperate to hold the visor body layers together and prevent respective lateral shifting. The invention also concerns a method of making a visor including molding the appropriately shaped visor body, emplacing the insert and folding the body sections together.

3,827,749
CHAIR STRUCTURE

Vern Johnson, Carbondale, Ill., and Bobbie L. Snyder, Kansas City, Mo.

Filed Mar. 6, 1973, Ser. No. 338,591
Int. Cl. A47c *15/00*
U.S. Cl. 297—248 **5 Claims**

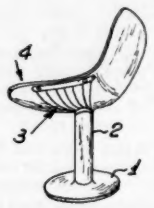


A chair structure adapted to stack vertically and to gang horizontally with a plurality of like chair structures wherein each chair structure has front and rear legs on each side with upper portions secured relative to a seat and frame spaced with said front and rear legs depending in diverging relation from said secured upper portions. The frame is mounted on the legs and has a base portion positioned between the legs and a back portion extending upwardly and rearwardly from the base portion. The front leg on each side and the back portion of the frame are inclined in substantially parallel planes to permit compact vertical stacking. The legs on one side of a chair have greater spacing and are adapted to nest above and in engagement with the similar legs of an other chair structure when stacked. The legs on said one side have a keeper member mounted thereon engageable with the legs of an adjacent chair structure nested therebelow to effect and maintain ganging of a plurality of like chair structures in side-by-side relation.

3,827,750
SUPPORT FOR THE SEAT OF A CHAIR

Marco Fantoni, Milan, Italy, assignor to Tecno S.P.A. Mobile forniture per arredamento, Milan, Italy

Filed Dec. 22, 1972, Ser. No. 317,516
Claims priority, application Italy, Jan. 13, 1972, 019311/72
Int. Cl. A47c *7/00, 7/14*
U.S. Cl. 297—445 **9 Claims**

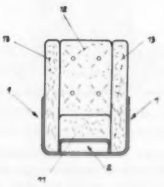


A chair with an integral support including a horizontal hub extending in the vertical plane of symmetry of the chair, two sets of brackets extending laterally from the hub and arranged symmetrically in respect of the plane, and two strips extending substantially horizontally and parallel to the plane, each of the strips interconnecting the outer ends of the brackets of a respective one of the sets. A seat having turned-down lateral edges extending substantially horizontally and parallel to the plane and shaped to conform to the upper support surfaces of the strips is mounted on the support by engaging the seat edges with the strips.

3,827,751
FURNITURE ASSEMBLY

Ole Wiberg, Vesterbrogade 180, Copenhagen, Denmark

Filed Jan. 16, 1973, Ser. No. 324,149
Claims priority, application Austria, Jan. 17, 1972, A376/72
Int. Cl. A47c *4/02, 7/02*
U.S. Cl. 297—440 **11 Claims**



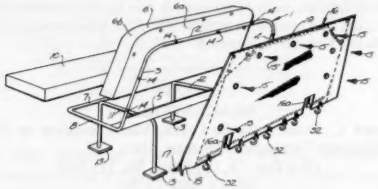
The frame of a piece of furniture consists of at least two interconnected components, each of which comprises an approximately U-shaped yoke extending in a plane and two extensions protruding from the yoke substantially at right angles to that plane.

3,827,752

PROTECTION UNITS FOR THE SEATS OF SCHOOL BUSES AND THE LIKE

Charles Clarence Bissinger, Sr., 224 Compton Ridge Dr., Cincinnati, Ohio 45215

Filed Feb. 13, 1973, Ser. No. 332,071
Int. Cl. A47c 7/02
U.S. Cl. 297—452 12 Claims



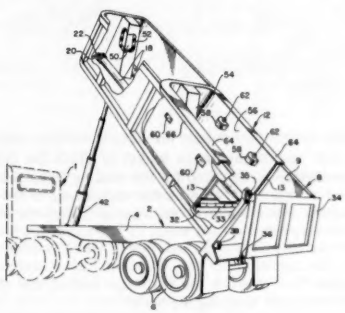
A protection unit for the seat of a vehicle such as a school bus or the like wherein the seat comprises a metallic frame supporting upholstered or fiber glass back and seat portions. The protection unit comprises a layer of energy absorbing material and an outer layer of appropriate upholstery material configured to cover at least the upper portion (and preferably substantially all) of that portion of the exposed seat frame supporting the seat back. The protection unit may be rapidly and easily installed without removing the seat from the vehicle.

3,827,753

VEHICLE DUMP BODY WITH AUXILIARY INNER MOVABLE BODY

Charlie C. Pitts, 9324 Whitehurst, Dallas, Tex. 75231

Filed Dec. 4, 1972, Ser. No. 312,060
Int. Cl. B60p 1/16, 1/28
U.S. Cl. 298—1 B 5 Claims



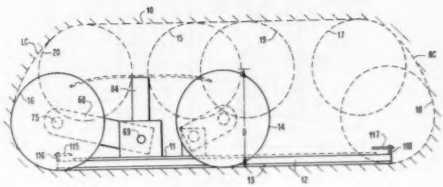
An elongated dump body for a vehicle which has an auxiliary inner movable body mounted within the elongated dump body. A hydraulic cylinder-plunger means interconnects with the forward portion of the elongated dump body and the auxiliary inner movable body, so as to move a portion of the load rearwardly while the elongated dump body of the vehicle is in a horizontal position. An elevating jack is attached near the forward end of the elongated dump body to elevate the elongated vehicle dump body and the auxiliary movable inner body subsequent to the movement of the auxiliary inner movable body to move a portion of the material therein out at the rear end of the elongated vehicle dump body prior to the elevation of both bodies by the hydraulic jack to an angle to discharge the remaining portion of the material in the body by gravity. Provision is made for scraping a portion of both the sides and floor of the elongated vehicle dump body as the material is moved rearwardly by the auxiliary inner movable body.

3,827,754

LOW PROFILE COAL MINING APPARATUS

Charles W. Gilley, deceased, late of Maury City, Tenn. (by Martha R. Gilley, executrix)

Filed Jan. 5, 1973, Ser. No. 321,337
Int. Cl. E21c 27/24, 29/16
U.S. Cl. 299—30 24 Claims



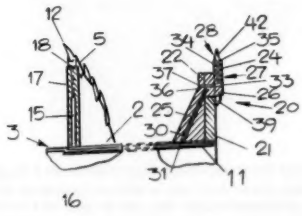
Apparatus for mining shallow seams of coal or the like employs a combination of parts resulting in a low profile of the machine and which may be operated without requiring an operator to accompany the machine to the mine face. The mining augers are remotely controlled and may be adjusted to provide for mining of seams which are thicker than the minimum profile height of the machine. The augers are mounted on a carriage which travels along guides on a base plate which can be shifted toward or from the mine face by remote control, and the superstructure mounted on the carriage reaches a height no greater than the diameter of the augers.

3,827,755

DRUM TYPE ROTARY COAL CUTTER WITH WATER JET ORIFICES

Thomas Jeffrey Allen, Bessacarr, England, assignor to Fletcher Sutcliffe Wild Limited, Horbury, Wakefield, Yorkshire, England

Filed Dec. 7, 1972, Ser. No. 311,734
Claims priority, application Great Britain, Dec. 11, 1971, 57638/71; Jan. 6, 1972, 706/72
Int. Cl. E21c 25/10
U.S. Cl. 299—81 20 Claims

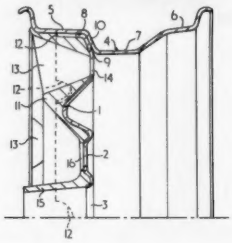


A rotary coal cutter of the type having a drum mounting a cutting implement wherein channels lead through the cutter to orifices from which water can be jetted to reduce dust. In particular the cutter may be of the helical type. From a different aspect, the drum has tubes formed within the drum and communicating with jetting orifices in the cutting implement.

3,827,756
WHEELS

William E. Mitchell, Coventry, England, assignor to Dunlop Limited, London, England

Filed Jan. 21, 1972, Ser. No. 219,794
Claims priority, application Great Britain, Jan. 25, 1971, 3116/71
Int. Cl. B60b 7/00
U.S. Cl. 301—63 R 13 Claims

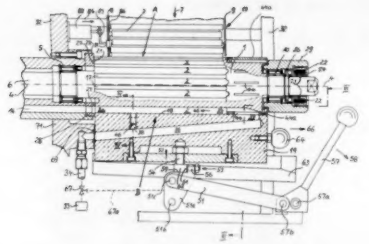


A vehicle wheel comprising a rim portion provided with axially spaced circumferentially extending tire bead seating regions and a rim well region positioned there-between, and a central disc portion the outer periphery of which is provided with a flange turned axially outwardly, that is, towards the outboard side of the wheel, the flange being secured to the rim portion under the axially outer tire bead seating region and the region of the disc portion adjacent the flange being arranged to be located by the outboard side of the rim well against axially inward movement relative to the rim portion, of which the following is a specification.

3,827,757
APPARATUS FOR TRANSPORTING ROD-SHAPED ARTICLES

Bob Heitmann; Alois Kasparek, and Johann Torbeck, all of Hamburg, Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed May 5, 1972, Ser. No. 241,229
Int. Cl. B65g 53/00
U.S. Cl. 302—2 R 20 Claims

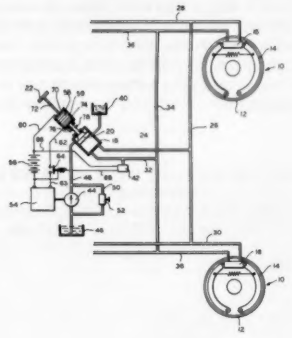


Apparatus for transporting filter stubs from a magazine having an open lower end into a tubular conveyor wherein the stubs are propelled axially into the hopper of a consuming or processing machine employs a single transfer drum which is continuously driven to move its axially parallel peripheral flutes from register with the open lower end of the magazine into register with the inlet of the tubular conveyor where the stubs are expelled from successive flutes by compressed air. A removable block is normally maintained in sealing engagement with ribs which separate the flutes from each other while the adjoining flutes register with the inlet of the tubular conveyor to thus prevent excessive losses in compressed air. Such compressed air is admitted by way of two ports one of which register with one end of a flute only while the other end of such flute registers with the inlet of the tubular conveyor. The other port communicates with successive flutes prior to, during and after the short interval of registry with the inlet. A mechanical intercepting device is movable into the lower end of the magazine to engage the adjacent ends of one or more layers of stubs and to press the other ends of such stubs against a stationary will of the magazine. This interrups the admission of stubs into the path of successive ribs on the transfer drum. The drum can remain in motion while the intercepting device dwells in its operative position.

3,827,758
BRAKE SYSTEM

Howard C. Hansen, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 18, 1972, Ser. No. 315,943
Int. Cl. B60t 13/74
U.S. Cl. 303—3 8 Claims



A brake system particularly for electric vehicles which provides power assisted hydraulic brakes in which the degree of power assistance is regulated for the braking force desired by the use of an operator compressible carbon pile in the circuit of an electric motor which drives a pump to vary the pressure in a master cylinder. In the event of any breakdown or malfunction for any reason in the power assist portion of the system the carbon pile may function as a compressible mechanical link between the hydraulic brakes and the foot pedal for manually applying the brake.

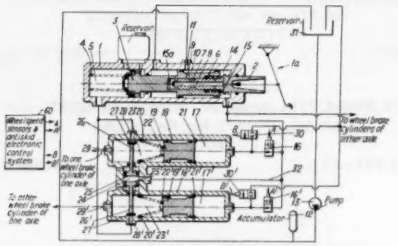
3,827,759
ANTISKID BRAKE SYSTEM WITH POWER ASSISTANCE

Juan Belart, Walldord, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 16, 1973, Ser. No. 324,049
Claims priority, application Germany, Jan. 22, 1972, 2202998
Int. Cl. B60t 8/12
U.S. Cl. 303—21 F 12 Claims

A power assisted brake system for a vehicle equipped with an antiskid system. The brake system includes a driver actuated control valve to switch on the assist power and a safety device which enables a certain braking power in case of failure of the assist power. The antiskid hydraulic control valves control the pressure in the hydraulic assist power connection. The

safety device includes a hydraulic emergency connection completely separate from the hydraulic assist power connection. This hydraulic emergency connection enables the elimination of the strong emergency spring employed in prior art arrangements. Two embodiments are disclosed.



3,827,760

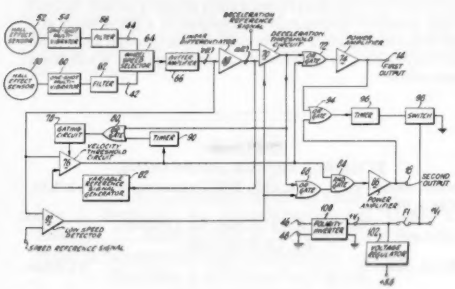
WHEEL SLIP CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES AND THE LIKE

Joseph E. Fleagle, Overland, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Jan. 17, 1972, Ser. No. 218,378

Int. Cl. B60t *8/10*

U.S. Cl. 303—21 P **26 Claims**



A control system for varying the pressure applied to fluid-controlled brake actuating mechanisms upon detection of a predetermined threshold of wheel deceleration brought about by the application of fluid pressure to the brake actuating mechanisms and upon detection of a subsequent, predetermined decrease in wheel rotational velocity. Signals proportional to the velocity and rate of change of velocity of a selected wheel are employed to control the sequence and duration of the energization and de-energization of the solenoid valves in a modulator valve assembly. The incremental decrease in wheel velocity from the time said deceleration threshold is reached, at which time a gradual reduction in brake line fluid pressure is effected, is monitored to determine when a predetermined increment of wheel speed Δv has been exceeded, at which time a sharp reduction in brake line pressure is effected. This predetermined increment Δv is defined by the value of wheel velocity at the time said deceleration threshold is reached and a variable reference signal which is directly related to the rate of change of wheel speed. The magnitude of Δv is inversely related to the magnitude of said reference signal, thereby shortening the period of time between the sensing of said wheel deceleration threshold and the sharp reduction of brake line pressure under road and load conditions which cause wheel velocity to decrease very rapidly upon application of braking force.

3,827,761

AUTOMOTIVE ANTISKID DEVICE WITH SAFETY APPARATUS

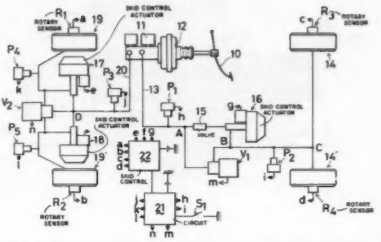
Masami Inada, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sept. 25, 1972, Ser. No. 292,251

Claims priority, application Japan, Sept. 25, 1971, 46-74909

Int. Cl. B60t *8/00*

U.S. Cl. 303—21 AF **2 Claims**



An automotive antiskid device having safety apparatus which includes a brake fluid pressure control apparatus disposed within a fluid pressure circuit from a master cylinder to the wheel cylinders and controlling the brake pressure to the wheel cylinders in accordance with a skid signal, fluid pressure detecting apparatus formed upon both sides of the master cylinder and the wheel cylinders, respectively, and operating according to the fluid pressure within the fluid pressure circuit, a safety apparatus automatically operating in accordance with the state of the fluid pressure detecting apparatus, and an electromagnetic fluid pressure cut-off apparatus disposed within the master cylinder and wheel cylinder fluid circuit in parallel with the brake fluid pressure control apparatus and being controlled by the safety apparatus.

3,827,762

BRAKING SYSTEMS FOR VEHICLES

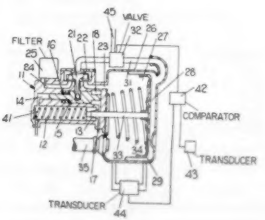
Andrew Peter Ives, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Brimingham, England

Filed Mar. 7, 1973, Ser. No. 338,945

Claims priority, application Great Britain, Mar. 18, 1972, 12793/72

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **1 Claim**



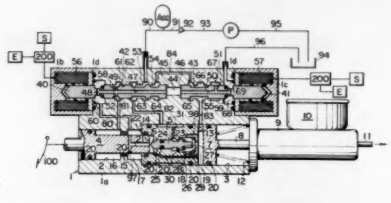
In a vehicle braking system the brakes of the vehicle are controlled automatically in some circumstances, for example during potential skidding. A vacuum actuator provides servo-assistance in the system, and a comparator receives a signal representing the required braking pressure and a further signal representing actual braking pressure. This latter signal is obtained by measuring the pressure drop across the vacuum actuator. The comparator controls the braking pressure.

3,827,763

CONTROL VALVE ASSEMBLIES FOR HYDRAULIC BRAKE SYSTEMS OF AUTOMOBILES

Uichiro Kobashi, Okazaki; Masami Inada, Aichi, and Katsuki Takayama, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 26, 1973, Ser. No. 335,759
Claims priority, application Japan, Mar. 6, 1972, 47-22973
Int. Cl. B60t 8/12
U.S. Cl. 303—21 F 5 Claims



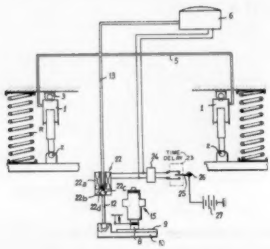
A control valve for an automotive vehicle having a hydraulic power braking system comprising a valve body, a power piston to apply braking pressure force to the wheel cylinders, a pressurizing chamber in which is received the power cylinder, first valve means to control the braking pressure on the known skid sensing mechanism, and second valve means manually operable by the operator to control the application of the braking pressure from source means. A bypath passage is provided to reduce fluid pressure within the pressurizing chamber independently of the second valve means so that reduction of fluid pressure in the chamber is performed without any influence of varying lift of the second valve means upon or just prior to the locking of the brakes, uniformity of skid preventing operation resulting therefrom.

3,827,764

COMBINED BRAKING AND TRIM-CORRECTION DEVICES FOR ROAD VEHICLES

Jean-Louis Giordano, and Michel Lietard, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France

Filed Feb. 5, 1973, Ser. No. 329,470
Claims priority, application France, Feb. 10, 1972, 72.04487
Int. Cl. B60t 8/18
U.S. Cl. 303—22 R 4 Claims



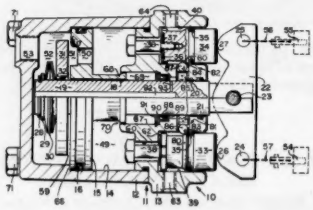
The invention relates to the limiting of braking pressure on a road vehicle comprising a trim-correction device connected in parallel with the suspension springs and intended to compensate for the variations in the load on the vehicle. As, with a trim-correction device, the distance between the wheels and the body remains constant irrespective of the load carried, the invention utilizes as the parameter indicating the excess load on the vehicle, the over-pressure which then exists in the jacks of the trim-correction device. The braking correction device comprises a pressure-limiting valve controlled by a member responsive to the fluid pressure in the jack cylinders.

3,827,765

BRAKE VALVE

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

Filed Jan. 29, 1973, Ser. No. 327,761
Int. Cl. B60t 15/06
U.S. Cl. 303—52 14 Claims



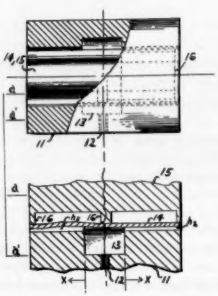
A brake valve for generating a right pressure output through a right pressure output port in response to a force input at a right force input, and a left pressure output through a left pressure output port in response to a force input at a left force input point.

3,827,766

FLEXIBLE MEMBRANE BEARING

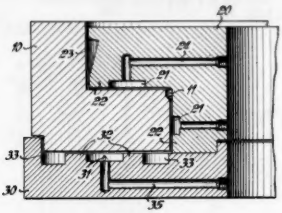
Gordon James Watt, Apt. 106, 245 Unquorua Rd., Fairfield, Conn. 06430

Filed July 6, 1971, Ser. No. 159,608
Int. Cl. F16c 7/04
U.S. Cl. 308—9 4 Claims



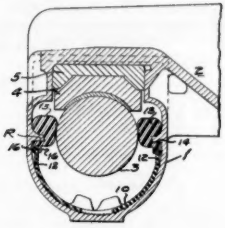
A low clearance pressurized fluid bearing with membrane surface suitably supported to allow bending and stretching in the clearance area in such manner to cause bearing action and to improve both load capacity and stiffness by its inherent tendency to compensate deficiencies in flow patterns.

3,827,767
HYDROSTATIC BEARING
Karl-Helmut Sinner, Dortmund-Hochsten, Germany, assignor to Hoesch Werke Aktiengesellschaft, Dortmund, Germany
Filed Jan. 29, 1973, Ser. No. 327,586
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 7 Claims



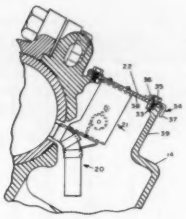
A hydrostatic bearing is constructed as a self-contained unit, including an outer bearing ring, an inner bearing ring, a support ring beneath the bearing rings for supporting the same, a plurality of pressure-oil chambers between the respective rings with these chambers being of different dimensions in dependence upon whether they are to counteract an axial, radial or tilting force component, and oil passages which communicate separately with the chambers for filling the same with oil under pressure.

3,827,768
AXLE JOURNAL STOP DEVICE
James J. Hennessy, Jr., Chambersburg, and Luther L. Bollinger, Sr., Reading, both of Pa., assignors to Hennessy Products Incorporated, Chambersburg, Pa.
Filed Mar. 5, 1973, Ser. No. 338,356
Int. Cl. F16c *41/00*
U.S. Cl. 308—40 5 Claims



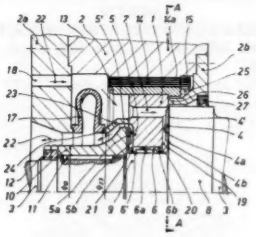
A journal stop device adapted to be inserted into a railway truck axle box between the axle journal and the sides of the box to transmit thrusts between the journal and box sides resulting from acceleration or deceleration of the truck movements.

3,827,769
TRACTION MOTOR SUSPENSION BEARING LUBRICATOR
George E. Boller, and Richard J. Renk, both of Winona, Minn., assignors to Gladys Miller, Winona, Minn.
Filed Mar. 26, 1973, Ser. No. 344,769
Int. Cl. F16c *33/66*
U.S. Cl. 308—132 5 Claims



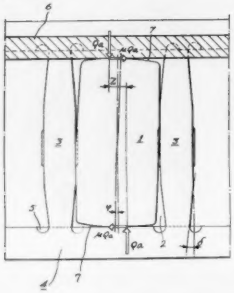
A traction motor suspension bearing lubricator having a carrier with a cooperating member to provide for correct registration.

3,827,770
HYDRODYNAMIC COMBINED AXIAL AND RADIAL BEARING
Hansulrich Horler, Zurich, Switzerland, assignor to Brown, Boveri & Company Limited, Baden, Switzerland
Filed May 23, 1973, Ser. No. 363,111
Claims priority, application Switzerland, June 9, 1972, 8591/72
Int. Cl. F16c *17/00*
U.S. Cl. 308—160 6 Claims



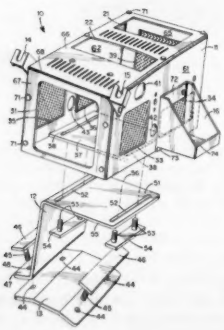
A rotatable shaft structure and hydrodynamic combined thrust and radial bearing therefor includes an annular bearing disc surrounding the shaft and supported within the bearing housing in a radially elastic manner between two axially spaced collars located on the shaft. Thrust bearings are provided between each collar and the corresponding side of the bearing disc and a radial bearing is provided between the shaft and the inner periphery of the bearing disc. The bearing disc is spring loaded in the direction of one of the thrust bearings, and initially cool lubricating oil is caused to flow through all three bearings in series, the oil first passing radially inward through the lubricating gap at the thrust bearing against which the bearing disc is spring loaded, thence axially through the radial bearing and finally radially outward through the lubricating gap or the other, non-loaded thrust bearing.

3,827,771
ROLLER BEARING
Lars Martin Ingemar Fernlund, Hindas, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands
Filed Sept. 21, 1972, Ser. No. 291,096
Claims priority, application Sweden, Oct. 22, 1971, 13407/71
Int. Cl. F16c 33/30
U.S. Cl. 308—212 4 Claims



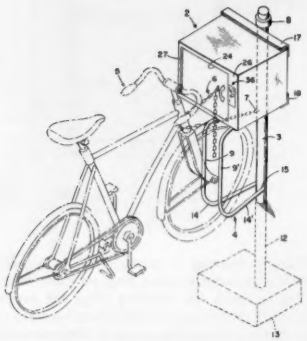
A roller bearing assembly comprising inner and outer ring members spaced apart to define an annular space for a plurality of rollers, each of the ring members having a radially directed flange confronting the axial end faces of the rollers, said roller end faces and flange surface confronting said roller end faces being of a predetermined configuration whereby the rollers assume an essentially stable equilibrium condition tilted at a predetermined angle relative to the bearing axis during operation of the bearing under axial load and a cage having a plurality of pockets for the rollers defined in part by axially oriented bars of a configuration so that the rollers can be tilted said predetermined angle and essentially limited only by the contact between said roller end faces of the surface of said flanges confronting and engaging said roller end faces.

3,827,772
MOBILE COMMUNICATION CONSOLE
Frederick Mark Johnson, P.O. Box 102, South Weymouth, Mass. 02190
Filed June 20, 1973, Ser. No. 371,857
Int. Cl. B60r 7/04
U.S. Cl. 312—7 R 11 Claims



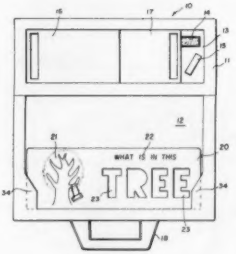
A communication console for two-way radio equipment used in automobiles. The console provides theft-proof mounting adjacent the driver for radio equipment including controls, speakers, microphones and walkie-talkies. Provisions are made for easy access to the equipment housed within the console.

3,827,773
LOCKER CONSTRUCTION INCORPORATING LOCKING MEANS FOR CYCLES
Anthony C. Aiello, 481 Raymond Ave., San Jose, Calif. 95128
Filed Mar. 6, 1972, Ser. No. 231,895
Int. Cl. A47b 81/00; E05b 73/00
U.S. Cl. 312—100 5 Claims



Presented is a locker construction which incorporates a locking mechanism, including a chain or cable, for locking a bicycle or motorcycle to the locker for security purposes. The lock construction for the locker incorporates means for locking one end of the chain or cable to the locker.

3,827,774
TOY DESK
Victor G. Reiling, Jr., East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 6, 1972, Ser. No. 312,684
Int. Cl. A47b 97/04, 27/00, 41/06
U.S. Cl. 312—230 10 Claims



A toy desk has a body with several storage compartments and a magnetic chalkboard on its upper surface. Plastic letters and numbers with closed frontal faces and sides have open backs holding magnets so that the letters and numbers can be magnetically secured to the chalkboard. Several templates storable in a compartment of said desk have picture and message material and through openings shaped to receive selected letters or numbers in an arrangement related to the picture or message. The desk includes means for storing the

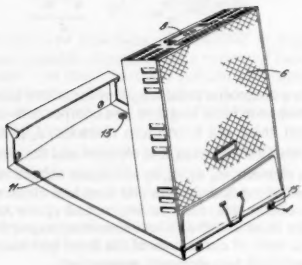
letters, preferably in a molded tray shaped to receive the letters, and projections are spaced over the corners of the chalkboard to receive templates to overlie the chalkboard.

3,827,775

HEATING APPLIANCES

Ricardo Ros Arrogante, Estella, Spain, assignor to Industrials Del Hogar, S.A., Navarro, Spain

Continuation of Ser. No. 203,579, Dec. 1, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,586
Claims priority, application Spain, Dec. 3, 1970, 163579
Int. Cl. A47b *67/02*
U.S. Cl. 312—245 **3 Claims**



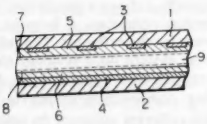
This invention provides a portable heating appliance comprising a hollow housing providing space within for storing a supply of gas therefor, and a heater screen at its front face, being the component parts of the appliance housed in such housing, and a cover for the housing comprising a panel portion and a tray portion, the panel portion and the tray portion each having peripheral flange portions and the construction and arrangement of the appliance being such that the housing and the cover can be secured together to mount the housing in an upright position for use or transportation of the appliance.

3,827,776

METHOD OF FABRICATING A GAS DISCHARGE DISPLAY DEVICE HAVING AN ALKALI METAL ATOMIC LAYER

Norihiko Nakayama, Tarumi; Mitsuoki Osawa, Akashi; Kiyoo Mizuko, Akashi, and Isao Takahashi, Akashi, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

Filed June 14, 1972, Ser. No. 262,480
Claims priority, application Japan, June 21, 1971, 46-44708; Sept. 18, 1971, 46-72862
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **2 Claims**



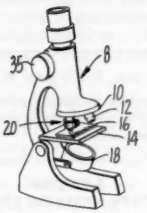
A pair of insulating substrates, at least one of which provides a group of electrodes on the inside surface, are positioned in spaced parallel relation having inside surfaces opposite each other with a gap filled with ionizable gas. The surface of the group of electrodes is covered with a dielectric layer, and this dielectric layer is covered with a material having a high secondary electron emissivity by introducing a fluid which includes alkali metal into the above-mentioned gap. Further, the dielectric layer is composed of a material having small activity with alkali metal.

3,827,777

MICROSCOPE FIELD MARKER

Ethelyn Ford, 8 Capri Ln., Pleasant Hill, Calif. 94530

Continuation of Ser. No. 172,064, Aug. 16, 1971, abandoned. This application June 14, 1973, Ser. No. 370,020
Int. Cl. G02b *21/00*
U.S. Cl. 350—81 **3 Claims**



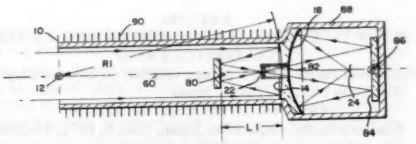
A field marker for a microscope is provided which can be clipped onto the objective of an ordinary microscope. The field marker has a small rubber stamp thereon impregnated with a suitable dye or ink and when the technician wishes to mark any particular section on a slide or the like, it is only necessary to run the microscope down to make contact with the slide. A small mark is thus left on the slide at a point of interest so that the point can be rapidly relocated.

3,827,778

DUAL IMAGING CONCENTRIC OPTICS

Bryce A. Wheeler, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 13, 1971, Ser. No. 207,294
Int. Cl. G02b *17/06*
U.S. Cl. 350—55 **24 Claims**



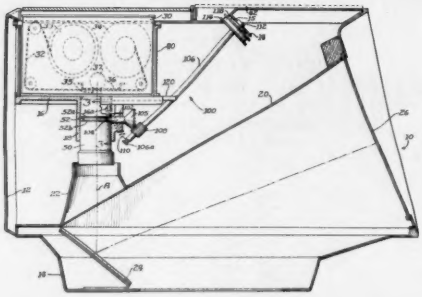
An all-mirror optical system using spherical mirrors, planar folding mirrors, and a mirror contoured to correct for spherical aberration.

3,827,779

LENS FOCUSING SYSTEM

Kenyon A. Hapke, Libertyville; Edwin S. Johnson, Glenview, and Joseph J. Sidlo, North Barrington, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed June 4, 1973, Ser. No. 366,934
Int. Cl. G02b 7/02
U.S. Cl. 350—255 7 Claims



A lens focusing system including eccentric means coupled to shaft means which cooperate to permit the focal length of a lens to be manually adjusted.

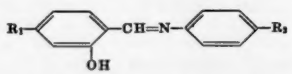
3,827,780

STABLE ANIL-TYPE NEMATIC LIQUID CRYSTALS

Mortimer M. Labes, Rosemont, Pa., assignor to Temple University, Philadelphia, Pa.

Filed Oct. 14, 1971, Ser. No. 189,315
Int. Cl. C07c 131/00; G02f 1/28
U.S. Cl. 350—160 LC 4 Claims

Stable anil-type nematic liquid crystals are provided of the formula



wherein R_1 and R_2 are each an alkyl, alkoxy, alkylester, aryl, aryloxy, arylester, aralkyl, carboxylic acid, halogen, nitro, cyano group or the like. The liquid crystals of this invention, because of the excellent stability, are especially useful in light valves, optical display devices and similar applications which involve the modulation of light.

ERRATUM

For Class 350—189 see:
Patent No. 3,827,798

3,827,781

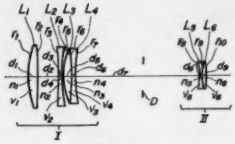
SUPER TELEPHOTO LENS SYSTEM HAVING A SMALL TELEPHOTO RATIO

Yoshitsugi Ikeda, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Feb. 13, 1973, Ser. No. 332,194
Claims priority, application Japan, Mar. 1, 1972, 47-20608
Int. Cl. G02b 9/34, 13/02
U.S. Cl. 350—220 2 Claims

A super telephoto lens system having a small telephoto ratio, which comprises front lens components consisting of a biconvex lens element, biconcave lens element and positive compound meniscus lens component, and a rear lens component spaced apart from said front lens components by a large air space inclusive of an iris diaphragm and consisting of a negative compound meniscus lens component, all lens elements being arranged in succession from the side of an object, and which is defined by the following five conditions, i.e.;

1. $f < -f_{2\,3\,4}$;
2. $0.04f < d_2 < 0.08f$;
3. $0.7 < -n_2 - 1/r_3 < 1.2$;
4. $0.1 < n_4 - n_3$ and $25 < \nu_3 - \nu_4$; and
5. $n_6 < n_5$ and $0.015 < -n_6 - n_5/r_9 < 0.05$



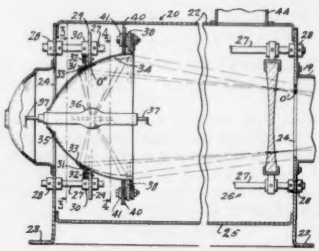
where f is a composite focal length of the whole lens system; $f_{2\,3\,4}$ in a composite focal length of lens components consisting of the second, third and fourth lens elements; d_2 is an air space between the first biconvex lens element and the second biconcave lens element; n_2, n_3, n_4, n_5 and n_6 are refractive indexes of the second, third, fourth, fifth and sixth lens elements counted from the object side, respectively; ν_3 and ν_4 are Abbe's numbers of the third and fourth lens elements, respectively; and r_3 and r_9 are radii of curvatures of the front lens surfaces of the second and sixth lens elements, respectively.

3,827,782

REFLECTOR APPARATUS

Angelo Boudouris, Sylvania, Ohio, and Geoffrey T. Gray, Lambertville, Mich., assignors to Eprod Incorporated, Toledo, Ohio

Filed Dec. 11, 1972, Ser. No. 313,848
Int. Cl. G02b 5/10
U.S. Cl. 350—295 9 Claims

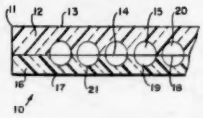


A method and apparatus for distorting an open end of a reflector into a predetermined shape is disclosed. The reflector surface generally defines a paraboloid of revolution. The reflector apparatus comprises a housing which contains a suspension system for the reflector. The reflector is connected to the suspension system on a resilient mounting device for movement thereupon within the housing. A compression ring having opposing compression screws is located about the periphery of the reflector adjacent its open end. Adjustment of the opposing compression screws against the reflector causes the open end to distort into a predetermined shape, while the resilient mounting device prevents undesirable distortion at the inner surface of the reflector, thereby providing a desired distribution for reflected light.

3,827,783
OPTICAL SHEET MATERIAL

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 56,047, June 24, 1970, Pat. No. 3,716,445, which is a continuation-in-part of Ser. No. 489,654, Sept. 23, 1965, Pat. No. 3,396,639. This application Jan. 4, 1973, Ser. No. 320,971
Int. Cl. G02b 5/12
U.S. Cl. 350—104 10 Claims



New and improved structures are provided in transparent sheet materials capable of performing a variety of functions in optical systems. The sheet materials contain a plurality of lenses or lens formations disposed or formed between the surfaces of the sheet which may serve to reflect or focus light directed through the sheet.

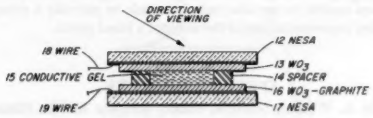
In one form, lens formations are embossed or molded as a plurality of cavities between the surfaces of the sheet.

In another form, cavities between the sheet surfaces contain optical lenses which are made of a transparent material having a higher or lower refractive index than the index of refraction of the material comprising the sheet itself.

3,827,784
SIMPLE, BONDED GRAPHITE COUNTER ELECTRODE FOR ELECTROCHROMIC DEVICES

Robert Domenico Giglia, Rye, N.Y., and Richard Howard Clasen, West Redding, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 9, 1971, Ser. No. 206,419
Int. Cl. G02f 1/36
U.S. Cl. 350—160 P 7 Claims



Method for forming a counter-electrode or imaging area in an electro-optical data display and imaging device, and the electrode and imaging areas formed. An electrochromic data display and imaging device may be formed by sandwich arrangement of the imaging area, the counter-electrode area with a suitable layer between. The device exhibits superior electrochromic reversability and improved speed and cell life over prolonged coloration and erase cycles.

3,827,785
GLASS LENS HAVING REDUCED CHROMATIC ABERRATION AND REFRACTIVE INDEX GRADIENT

Kazuo Matsushita, Kobe; Koichi Nishizawa, Itami, and Minoru Toyama, Amagasaki, all of Japan, assignors to Nippon Selfoc Co., Ltd., Tokyo, Japan

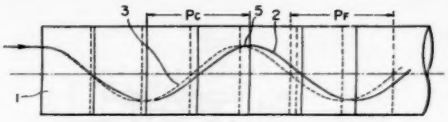
Filed Dec. 22, 1972, Ser. No. 317,687
Claims priority, application Japan, Dec. 25, 1971, 47-3143
Int. Cl. G02b 3/00, 5/14
U.S. Cl. 350—175 GN 6 Claims

A glass lens having a reduced chromatic aberration and a refractive index gradient such that its refractive index is expressed by the following equation

$$N = No\,(1 - ar^2)$$

wherein N is the refractive index at a distance r from the central axis of the lens in a cross section perpendicular to the central axis, No is the refractive index at the central axis, and a is a positive constant;

wherein the composition of the glass lens at its central axis is 2–50mol% of Cs_2O, 30–98 mol% of Sio_2 and 0–30 mol% of B_2O_3 with the provisio that $(SiO_2 + B_2O_3)$ is 50–98 mol%, and optionally other ingredients, the concentration of cesium ions



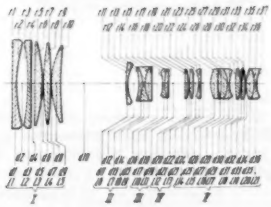
in the lens gradually decreasing from the central axis of the lens to its peripheral surface to provide said refractive index gradient, said glass lens has a diameter of 0.2 to 5 mm, the difference between the refractive index of the peripheral surface of the lens and N_o is at least 0.003, and $|\Delta P|/P$ is less than 0.05.

wherein P is $\pi\sqrt{2}a$, $|\Delta P|$ is the absolute value of the difference between the P for C line light (P_c) and the P for F line light (P_F), P is P value for D line light.

3,827,786
HIGH-SPEED VARIFOCAL OBJECTIVE SYSTEM

Karl Macher, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Germany

Filed Jan. 31, 1973, Ser. No. 328,846
Claims priority, application Germany, Feb. 1, 1972, 2204553
Int. Cl. G02b 15/18
U.S. Cl. 350—186 10 Claims



A varifocal objective system with a relative aperture of 1:2 and a varifocal ratio of 10:1 consists of a six-member basic objective and a four-component vario attachment, the latter being composed of two axially movable negative components bracketed by two positive components. The first component, which is limitedly axially shiftable for focusing purposes, includes two negative menisci with confronting concave surfaces followed by three positive singlets. The second component consists of a negative meniscus with rearwardly facing concavity, followed by a negative triplet. The third component is a negative doublet. The fourth component consists of two air-spaced positive singlets. The first member of the basic objective is a negative meniscus with forwardly facing concavity.

3,827,787

ARRANGEMENT FOR ELIMINATING INTERFERENCE REFLECTIONS IN A LIGHT DEVIATING DEVICE

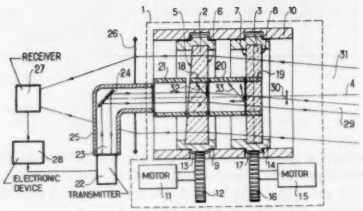
Guy Ripart, Le Plessis Robinson, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Jan. 22, 1973, Ser. No. 325,681

Claims priority, application France, Jan. 21, 1972, 72.02086

Int. Cl. G02f 1/34

U.S. Cl. 350—285 6 Claims



Device for deviating light comprising two optical prisms driven in a rotating movement about a same axis, each of these prisms having an opaque sleeve crossing it from one face to the other and surrounding the rotating axis, and a method for producing prisms for the deviating device, consisting more particularly in positioning an opaque substance in a cylindrical groove formed in a transparent plate, and in dividing the plate in two parts along a transversal plane.

3,827,788

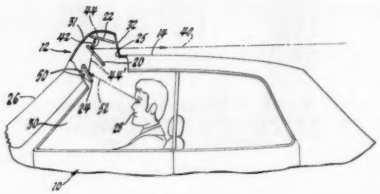
ONE-WAY MIRROR PERISCOPE REAR VISION SYSTEM

David L. Clark, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1973, Ser. No. 346,652

Int. Cl. G02b 5/08

U.S. Cl. 350—302 2 Claims



A periscope rear vision system for viewing over the roof of a motor vehicle includes three mirrors, one of which is a one-way mirror and two of which are conventional plane mirrors. The one-way mirror located above the roof receives rearward images for redirection upwardly to one of the plane mirrors also located above the vehicle roof. This mirror reflects the images downwardly with partial transmission through the one-way mirror and an opening in the roof to the other plane mirror located in the vehicle interior and redirection therefrom to the driver.

3,827,789

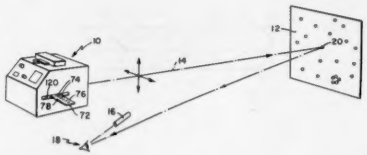
MONITORING DEVICES

Stanley F. Molner, Morristown, N.J., and Joel S. Newman, Framingham, Mass., assignors to Biometrics, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 104,858, Jan. 8, 1971, abandoned. This application Sept. 5, 1972, Ser. No. 286,422

Int. Cl. A61b 3/02

U.S. Cl. 351—23 21 Claims



A method and apparatus for measuring a subject's visual field by presenting a target consisting of a spot of light at a series of selected locations within the subject's visual field and monitoring and interpreting his resulting eye movements and positions. The technique makes use of the tendency of the subject's eyes to respond to the sudden appearance of the dot of light by fixating on that target within a relatively short time after the target has been presented to him. The apparatus employed to measure the subject's visual field includes a projector which presents the light-dot targets in a known sequence on a screen before the subject, and simultaneously makes a permanent photographic image of those light-dot targets which the subject sees as determined by the eye movement monitor and its associated logic circuitry. The permanent photograph shows the viewed light dots seen by the subject in substantially the same general arrangement as presented to him. The voids of the photograph represent those points not seen by the subject and thus map his blind spots. Alternatively, a photographic image of those light-dot targets which the subject was unable to see also may be made to provide a complementary representation of the subject's blind spots.

3,827,790

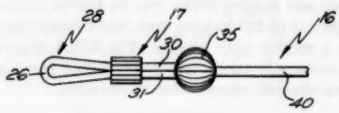
SPECTACLE HOLDER

Ronald A. Wenzel, Norfolk, Mass., assignor to The Hilsinger Corporation, Plainville, Mass.

Filed Apr. 26, 1973, Ser. No. 354,771

Int. Cl. G02c 5/00; F16g 11/14

U.S. Cl. 351—123 4 Claims



A flexible member adapted to be attached to the ear engaging portions of the temples of a spectacle by means of elastic loops at the ends of the device with a means for adjusting the encircling size of the elastic loops.

3,827,791

OPTICAL PANORAMIC PROJECTION APPARATUS

Richard A. Mecklenborg, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

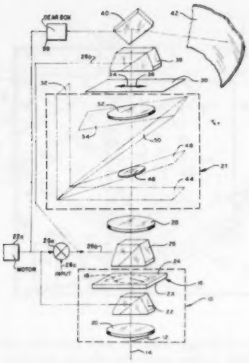
Filed Aug. 10, 1972, Ser. No. 279,527

Int. Cl. G03b 37/00

U.S. Cl. 352—69 7 Claims

In the projection of a transparent orthophoto on to a cylindrical screen, a mercury capillary lamp provides a line of light

which is focused on the orthophoto. One end of the line passes through an axis of the orthophoto and the line of light being rotated about the axis. Line images emanating from the orthophoto are transmitted through a Scheimpflug stage



which provides magnified line images which are directed to a mirror and reflected therefrom on to the screen. The magnification of a magnified line image is related to its location with respect to the Scheimpflug stage.

3,827,792

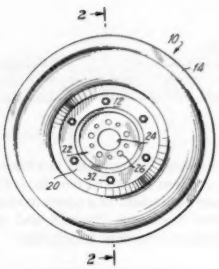
RESILIENT TIRE AND WHEEL ASSEMBLY

Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y. 11021

Filed Mar. 24, 1972, Ser. No. 237,649

Int. Cl. B60c *7/08, 7/24, 19/00*

U.S. Cl. 152—319 **3 Claims**



An improved resilient tire combination comprising a wheel assembly which is adapted to be mounted on a vehicle wheel hub. The complete tire is formed with an inner core and an outer carcass where interengaging cavities and projections prevent relative rotation between said inner core and outer carcass with bolts provided for securing the complete tire to said wheel assembly.

3,827,793

STEREOSCOPIC MICROSCOPY

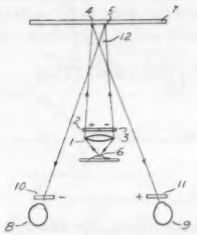
Leslie Peter Dudley, Los Angeles, Calif., assignor to Dudley Optical Laboratories, Inc., Beverly Hills, Calif.

Filed Nov. 3, 1972, Ser. No. 303,493

Int. Cl. G03b *21/00*

U.S. Cl. 353—8 **6 Claims**

An improved system is provided for converting both monocular and binocular non-stereoscopic microscopes to the stereoscopic mode with the aid of polarizing filters or color filters. The system includes means by which the specimen under examination can be viewed by stereo projection, and means by which stereo photomicrography on black-and-white or color



film can be easily and effectively accomplished. The system also includes improved means for illuminating opaque specimens for stereo projection or stereo photomicrography by reflected light.

3,827,794

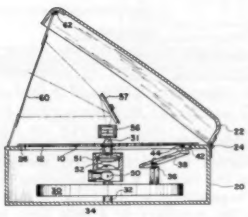
AUDIOVISUAL DISC PROJECTOR

Panayotis C. Dimitracopoulos, P.O. Box 458, Montreal, Quebec, Canada

Filed Nov. 6, 1972, Ser. No. 304,202

Int. Cl. G03b *31/06;* **G11b** *3/40*

U.S. Cl. 353—18 **9 Claims**



An audiovisual disc projector, accepting for audiovisual reproduction audiovisual discs having a stationary spiral sound track surrounding a stationary ring of projectable images, said disc projector including a rotating member carrying a sound transducer for the reproduction of the audio information of the sound track and a stationary projection-light source secured to a shaft passing through the turntable bearing.

3,827,795

SELF-CONTAINED FRONT PROJECTION DISPLAY CABINET

Paul B. Hinds, 123 Browncroft Blvd., Rochester, N.Y. 14609

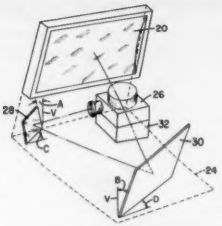
Filed Apr. 19, 1972, Ser. No. 245,499

Int. Cl. G03b *21/28*

U.S. Cl. 353—77 **8 Claims**

The display cabinet includes a housing, a viewing window in the front of the housing, a front projection "ideal" screen mounted inside the housing and viewable through the window from a selected viewing area in front of the cabinet, a projector mounted in the housing, and a mirror system mounted in

the housing for folding the projection beam and impinging it upon the screen at an angle different from that at which ambient light strikes the screen. The screen is "aimed" to position the image light into the selected viewing area and separate from reflected ambient light.

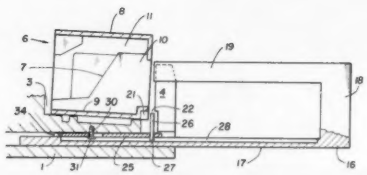


3,827,796

SLIDE TRAY INDEXING MECHANISM FOR SLIDE PROJECTORS AND THE LIKE

Jean-Paul Erchoff, Belsele, Belgium, assignor to GAF Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser No. 327,801
Int. Cl. G03b *23/04*
U.S. Cl. 353—116 **21 Claims**



A reversible slide tray indexing mechanism is provided which comprises an indexing lever slidably and pivotably mounted on the base of a slide projector having a pawl for sequential engagement with a rack of indexing projections formed on the periphery of a slide tray, and an actuating member for imparting the required movement thereto. The slide carrier of the projector is provided with a camway in operative engagement with said actuating member for transversely moving said pawl out of engagement with the rack of indexing projections and permitting pviotal movement thereof into alignment with the next projection of the indexing rack upon withdrawl of the slide carrier from the projector, and transversely moving said pawl into engagement with said next projection and pivotally moving said lever to advance the slide tray to the next position by transporting the same through an extent corresponding to the distance between two adjacent projections on the rack upon insertion of the slide carrier into the projector. Forward and reverse operation is controlled by means of a slidable bracket in engagement with the indexing lever to selectively bias the same for pivotal movement in the desired direction.

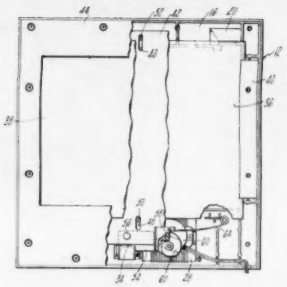
3,827,797

OVERHEAD PROJECTOR APPARATUS

Robert B. Eaves, 1395 Varnum Dr., Wayne, Pa. 19087

Filed Apr. 2, 1973, Ser. No. 347,392
Int. Cl. G03b *21/00*; G09f *13/34*
U.S. Cl. 353—122 **10 Claims**

An adapter or attachment mechanism is presented for use in a standard overhead projector whereby displays having the illusion of motion can be projected. The adapter has a transparent display platform which houses a movable dot patterned activator sheet and has a dot patterned art sheet on the platform, with this assembly being positioned over the normal light table or display deck of an overhead projector. Transmission of light through the adapter assembly coincidentally with movement of the activator sheet result in the projection of a display having the illusion of motion.



3,827,798

OPTICAL ELEMENT OF REDUCED THICKNESS

Luis W. Alvarez, Berkeley, Calif., assignor to Optical Research & Development Corporation, Oakland, Calif.

Division of Ser. No. 131,156, April 5, 1971, Pat. No. 3,739,455. This application Apr. 30, 1973, Ser. No. 355,832
Int. Cl. G02b *3/08*
U.S. Cl. 350—189 **5 Claims**

An optical element of reduced thickness is formed by a mosaic of discrete lens faces, the lens faces together deflecting light in a manner equivalent to a conventional optical element of much greater thickness. Process and apparatus for the production of the lens element is included.

3,827,799

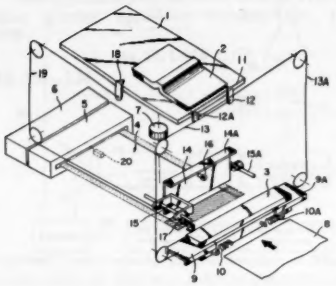
DEVICE FOR PREVENTING DEVELOPMENT OF NON-IMAGE MARGINAL PORTIONS OF A PHOTORECEPTOR IN ELECTROPHOTOGRAPHIC COPYING APPARATUS

Yutaka Koizumi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1973, Ser. No. 348,228
Claims priority, application Japan, Apr. 17, 1972, 47-37745
Int. Cl. G03g *15/02*, *15/04*
U.S. Cl. 355—3 R **5 Claims**

In an electrophotographic copying apparatus, a device for preventing the charging device from charging selected marginal portions of a photoreceptor, to thereby prevent staining of these selected marginal portions when the charged part of the photoreceptor is exposed to the image of an original, and this image is later developed. Charging of the selected marginal portions of the photoreceptor is prevented by means of plates which are moved with respect to the charging device by manually moving indicators disposed along the length and

width of the rest plate that supports an original for copying. Thus, only that portion of the photoreceptor which corresponds to the selected size of the original is charged, while the marginal portions of the photoreceptor which would surround the projected image of the original are not charged.



3,827,800

APPARATUS FOR TRANSFERRING ELECTROSTATIC LATENT IMAGES IN ELECTROPHOTOGRAPHIC COPIERS OF IMAGE TRANSFER TYPE

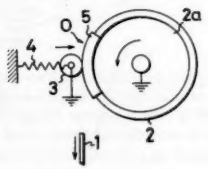
Susumu Tanaka, Sakai; Yuji Enoguchi, Higashi-Osaka, and Takao Fujiwara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1973, Ser. No. 338,784

Claims priority, application Japan, Mar. 15, 1972, 47-26760

Int. Cl. G03g *15/18*

U.S. Cl. 355—3 R **8 Claims**



An apparatus comprising a photosensitive element to be driven for charging and exposure to form an electrostatic latent image on its surface and having a grounded electroconductive backing on its rear face, a transfer roller adapted to bring the dielectric surface of copy paper into intimate contact with the surface of the photosensitive element and to ground the electroconductive backing of the paper for electrical connection with the conductive backing of the photosensitive element, disconnecting means for breaking electrical connection between the roller and the conductive backing of the element through grounding while the paper is not positioned between the element and the roller, and means for grounding the conductive backing of the paper after the paper has passed through a transfer station, so as to prevent discharge due to the breakdown of air gap between the transfer roller and the photosensitive element for the protection of the charge retaining surface of the element. The transfer roller has means for selectively breaking the electrical connection between the two backings for use with copy papers of varying sizes.

3,827,801

ELECTROPHOTOGRAPHIC COPIER OF IMAGE TRANSFER TYPE

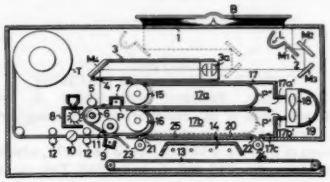
Susumu Tanaka, Sakai; Yuji Enoguchi, Higashi-Osaka, and Takao Fujiwara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1973, Ser. No. 338,782

Claims priority, application Japan, Mar. 16, 1972, 47-31636

Int. Cl. G03g *15/00*

U.S. Cl. 355—15 **9 Claims**



An image transfer type electrostatic copier includes a rectangular box open at one end and connected to a suction fan at its other end and has a pair of longitudinally spaced slits formed in a wide wall thereof which is separated by a removable wall section. A cleaner belt extends from a storage roll through one slit along the inside face of the box wall through the other slit to a take-up roll. A photosensitive web is sucked into the box and traverses a looped path which extends along the cleaner belt under the influence of the reduced pressure in the box. The web, is driven and charged, exposed to a scanned image, has toner applied and the toned image is transferred to copy paper.

3,827,802

MICROFILM CODING APPARATUS

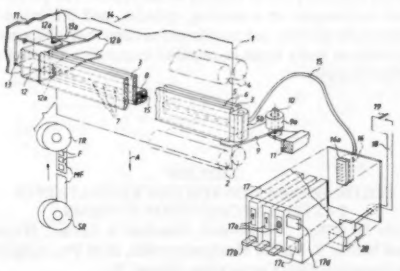
Josef Pfeifer, Unterhaching; Wilfried Hofmann, and Karl-Heinz Dietrich, both of Munich, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 243,201, April 12, 1972, Pat. No. 3,750,553. This application Feb. 7, 1973, Ser. No. 330,382

Claims priority, application Germany, Apr. 17, 1971, 2118732; Dec. 4, 1971, 2160211

Int. Cl. G03b *17/24*

U.S. Cl. 335—41 **13 Claims**



A microfilming apparatus wherein one of two transparent plates which define the image plane for originals carries a row of enclosed electric lamps serving to encode information on microfilm during exposure of successive originals onto successive microfilm frames. The encoded information facilitates the finding of selected microfilm frames. The plates are movable from operative to exposed positions to be accessible for cleaning. The number and distribution of lamps which light up to

encode information on microfilm is controlled by a programming unit which can be actuated by hand or automatically, either in response to detection of successive originals in the image plane or in response to detection of signal generating sheets which are fed into the image plane alternately with successive originals. A detector scans the thickness and/or the conductivity of signal generating sheets and causes the programming unit to change the number and/or distribution of lamps which are lighted simultaneously or substantially simultaneously with the exposure of successive originals onto the microfilm.

3,827,803

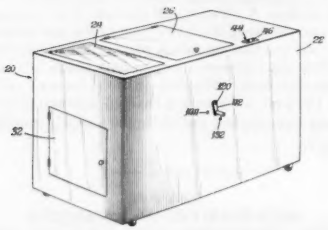
COPIER-DUPLICATOR MACHINE

Loren E. Shelffo, Palatine, and Henry A. Mathisen, Northbrook, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Division of Ser. No. 134,846, April 16, 1971, which is a division of Ser. No. 735,402, June 7, 1968. This application Mar. 12, 1973, Ser. No. 339,756

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **5 Claims**



A copier-duplicator includes a master preparing section for uniformly charging and then exposing a photoelectrostatic master to provide a latent image on the master. An adjustable optical system permits the size of the image to be changed to provide copies of different sizes, and a controlled illumination source removes the charge from the unused area of the master to avoid spurious powder transfer to the copies. The prepared master is clamped on a rotating cylinder, and the image is developed by powder and transferred to copy sheets by a pressure roller as many times as required to produce the desired number of copies.

3,827,804

COLOR SEPARATION FOR DISCRIMINATION IN PATTERN RECOGNITION SYSTEMS

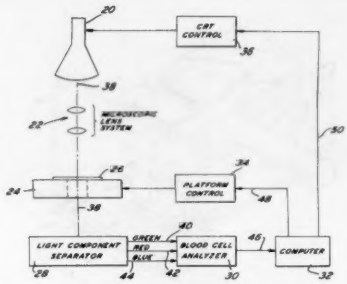
Melvin N. Miller, Wynnewood; Marshall S. Levine, Wayne, and Melvin E. Partin, Montgomeryville, all of Pa., assignors to Geometric Data Corporation, Wayne, Pa.

Filed Oct. 16, 1972, Ser. No. 298,062

Int. Cl. G01n *15/02*

U.S. Cl. 356—39 **6 Claims**

A color separation system is provided for use in combination with a pattern recognition system which is particularly useful in blood cell analysis. The color separation means include filtering means for transmitting from a field having a plurality of patterns light in a plurality of spectral bands. Photomultiplier means are responsive to the filtering means for providing a pluarlity of electrical signals each of which varies in accordance with the light intensity in one of the spectral



bands. The signals are utilized by the pattern recognition system and facilitate discrimination of predetermined patterns in the field.

3,827,805

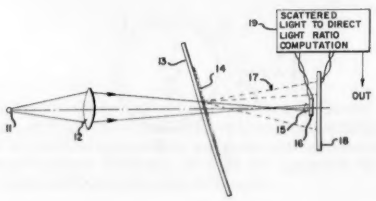
SYSTEM FOR CONTROLLING CENTRIFUGAL FORCES TO PRODUCE CELLULAR MONOLAYERS

Gerald R. Mansfield; Charles H. Rogers, and Kevin J. Sullivan, all of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed May 24, 1973, Ser. No. 363,434

Int. Cl. G01n *21/00, 21/24*

U.S. Cl. 356—73 **10 Claims**



A control system for a slide centrifuge includes a source of light imaged through the slide. A direct light detector and a scattered light detector detect the light. The ratio of the outputs of the two detectors is a signal which is proportional to the spacing of the cells on the slide. The centrifuge motor is stopped when equality occurs between this ratio signal and a decaying signal.

ERRATUM

For Class 356—85 see:
Patent No. 3,827,675

3,827,806

DEVICE FOR FACILITATING THE ADJUSTMENT OF AN OPTICAL SYSTEM

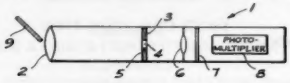
Lars-Erik Skagerlund, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Continuation of Ser. No. 814,928, April 10, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,150

Claims priority, application Sweden, Apr. 18, 1968, 5205/68

Int. Cl. G01b 11/26

U.S. Cl. 356—138 **3 Claims**



An optical system for the receiver section of a laser range finder comprising an objective, a diaphragm with a very small aperture, an ocular and a photomultiplier immediately behind the ocular. The diaphragm is at right angles to the optical axis of the surface and is provided with a reflective coating on that surface which faces the objective.

3,827,807

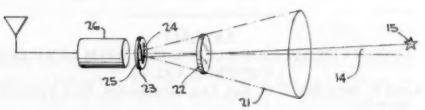
STAR SCANNER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Richard L. Gutshall, 4170 Judson Dr.; Randall T. McConaughey, 7810 Durham Way, both of Boulder, Colo., and Frank A. Volpe, 557 Beach Dr., Annapolis, Md.

Filed Sept. 29, 1972, Ser. No. 293,725

Int. Cl. G01b 11/26

U.S. Cl. 356—141 **3 Claims**



A star scanner on a spin stabilized spacecraft includes a reticle with a pair of slits having different separations as a function of the spacecraft vertical plane, to form a "V" slit. The time between a star image crossing one of the slits relative to a reference telemetry time provides an indication of azimuth angle. The time between the image crossing the two slits provides an indication of elevation angle of the star. If a star cluster is detected such that two stars pass the slits in less time than normally required for a single star to cross the two slits, an indication of the cluster occurrence is derived. Means are provided to prevent effective detection of large celestial bodies, such as the sun or moon.

3,827,808

METHOD AND APPARATUS FOR MEASURING THE OPACITY OF SHEET MATERIAL IN WHICH THE TRANSMITTANCE SIGNAL IS COMPENSATED FOR THE REFLECTIVITY OF THE MATERIAL

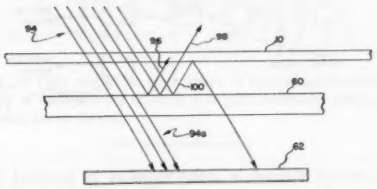
Boong Y. Cho, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed May 9, 1973, Ser. No. 358,606

Int. Cl. G01n 21/18, 21/22, 21/30

U.S. Cl. 356—199 **31 Claims**

Specifically disclosed is a method and apparatus for measuring the opacity of sheet material, more particularly for measuring the opacity of paper according to the TAPPI contrast ratio definition. A moving sheet of paper from a paper making machine or coater is passed through the gap between a light source and a photodetector. The light transmitted through the paper is passed through a window of opal glass and a bandpass filter before it is received by the photodetector. The opal glass window constitutes a partial reflector having an effective reflectivity between about 20 and 70 percent. This produces multiple reflections between the opal glass and the paper next to it, with sufficient magnitude to compensate the transmittance measurement for the reflectivity of the paper, and thereby automatically corrects the instrument for changes in



the composition of the paper. Because of the bandpass filter, the photodetector responds substantially only to light in the visible portion of the spectrum. According to another disclosed arrangement wherein the opal glass window is not used, the instrument is compensated by the use of a second photodetector responsive to light reflected from the side of the paper where the light source is located. Signals from the two detectors are then combined in a simple computer arrangement to obtain a signal which is compensated for the reflectivity of the paper. The compensated signal provided by either of the disclosed arrangements is correlated with opacity in conformance with the TAPPI standard.

3,827,809

CIRCUITS FOR DERIVING A COMMON OUTPUT SIGNAL FROM A PLURALITY OF AMPLIFIERS IN APPARATUS FOR DETECTING BLEMISHES IN SHEET MATERIAL

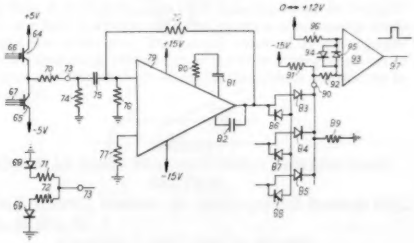
Paul Nash, 44 Westbourne Ter., London, England

Filed May 11, 1973, Ser. No. 359,511

Claims priority, application Great Britain, May 12, 1972, 22393/72; May 19, 1972, 23711/72

Int. Cl. G01n 21/16, 21/32, 21/30

U.S. Cl. 356—200 **15 Claims**

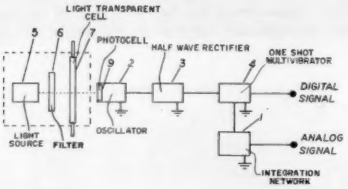


A circuit for combining the outputs of several amplifiers, through an array of diodes, so that the combined output has a noise content whose amplitude is less than that of the individual amplifier outputs. The circuit is described as part of an inspection system for detecting blemishes in sheet material flowing past a series of photo-sensitive devices, the amplifiers receiving the outputs of the photo-sensitive devices.

3,827,810
OPTICAL MONITOR

Jorge G. Codina, Hartsdale, N.Y., assignor to Combined Sciences Corporation

Filed Jan. 8, 1973, Ser. No. 321,960
Int. Cl. G01n 21/26
U.S. Cl. 356—201 5 Claims

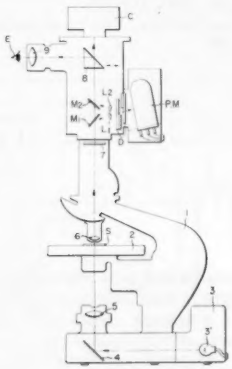


An optical monitor in which liquid to be analyzed flows through a light transparent cell. First means passes a light beam of selected bandwidth through the cell, the beam being attenuated to an extent dependent upon the light absorption characteristic of the liquid. A photocell device is responsive to the attenuated beam, the resistance of the device varying with the amount of attenuation. An oscillator is coupled to the device to produce an attenuating signal, the signal frequency varying with changes in the resistance of the device whereby the frequency is a measure of the characteristic.

3,827,811
AN OPTICAL MEASURING DEVICE EMPLOYING A DIAPHRAGM WITH REFLECTING SURFACES

Yoshio Kato, Yokohama, and Yutaka Ogiwara, Niiza, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,769
Claims priority, application Japan, Mar. 15, 1972, 47-25782; Mar. 15, 1972, 47-30339
Int. Cl. G01j 1/42; G01n 21/22
U.S. Cl. 356—225 10 Claims

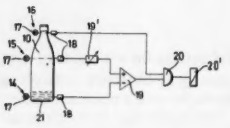


An optical measuring device employs an objective lens and an adjustable diaphragm disposed in a focal plane of the lens. The diaphragm has a portion formed as a reflecting surface so that part of the light from the object focused by the lens on the diaphragm passes through the aperture, while the remaining light is reflected by the reflecting surface. Measuring means is disposed behind the diaphragm to receive and measure the light passing through the aperture, and a viewing optical system receives the light reflected by the reflecting surface of the diaphragm.

3,827,812
METHOD OF AND APPARATUS FOR TESTING THE CONDITION OF BOTTLES

Helmut Heimann, Wuppertal-Barmen, Germany, assignor to Wickuler-Kupper-Braverei KGaA, Wuppertal-Barmen, Germany

Filed Feb. 8, 1973, Ser. No. 330,827
Claims priority, application Germany, Feb. 9, 1972, 2206054
Int. Cl. G01n 21/16, 21/32
U.S. Cl. 356—240 11 Claims



Apparatus for testing the condition of a bottle includes first and second scanner devices for transmitting light beams through the bottle respectively in the vicinity of the bottom of the bottle and at another level at which the cross-section of the bottle is about the same as in the vicinity of the bottom of the bottle. The respective light beams are then sensed by photocells which transmit their respective signals to an amplifier for comparing the electrical signals and generating a further signal when the electrical signals differ by a predetermined amount. The further signal is utilized to actuate a device for ejecting bottles partially filled with liquid such as lye which cause the light transmission of the two light beams to differ. A sensing device is also provided for assuring that the attitude of the bottle is appropriate before testing.

3,827,813
AUTOMATIC FILLING RULING PEN WITH AUXILIARY CONTROL VALVE

Leon K. Stryczek, P.O. Box 134, Greenpoint, New York, N.Y. 11222

Filed Apr. 14, 1971, Ser. No. 133,834
Int. Cl. B43k 5/10
U.S. Cl. 401—151 3 Claims

A ruling pen having a pair of relatively adjustable blades at one end of a pen barrel for drawing lines of variable width, a chamber above the blades, a capillary channel communicating between this chamber and the space between the blades for delivering ink thereto, and a stem extending axially through the barrel or handle for manipulation to control the ink flow to the blades. The stem carries a pair of axially spaced pistons

which are receivable within a cylindrical passage axially extending over a distance greater than the spacing between the pistons and interposed between the aforementioned chamber having an ink reservoir. An auxiliary valve normally blocking the capillary channel is mechanically displaced by a needle carried by the stem below both pistons.

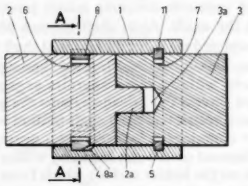
ERRATUM

For Class 403—113 see:
Patent No. 3,827,735

3,827,814
DEVICE FOR A QUICK CONNECTION OF TRACTION ELEMENTS

Jean Laurent, Saint Germain-en-laye, and Claude Duconge, Le Vesinet, both of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil-Malmaison (Hauts-de-Seine), France

Filed Sept. 24, 1971, Ser. No. 183,376
Claims priority, application France, Oct. 1, 1970, 70.35617
Int. Cl. F16b 7/00
U.S. Cl. 403—301 **9 Claims**



Device for connecting end portions of two tubular elements through a connecting sleeve by securing the end portion of each element to said sleeve, comprising a deformable ring which, in its expanded position, locks said element against a translation motion by engagement into facing slots of the element and the sleeve and whose peripheral wall has recesses adapted to co-operate with internal bosses provided in the slot of the sleeve so as to compress said ring by rotation of the sleeve with respect to the element.

ERRATUM

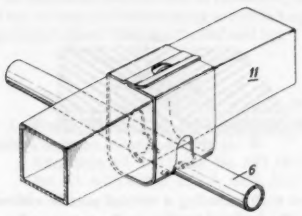
For Class 403—165 see:
Patent No. 3,827,820

3,827,815
SPRING CLIPS

John Strange, Cardiff, England, assignor to Firth Cleveland Fastenings Limited, Pontypridd, Glamorgan, Great Britain

Filed July 11, 1972, Ser. No. 270,783
Claims priority, application Great Britain, July 12, 1971, 32534/71
Int. Cl. F16b 7/04
U.S. Cl. 403—397 **5 Claims**

A clip of resilient material, such as a strip of heat treated, high carbon steel, has inwardly directed terminal portions extending from the ends of two limbs which together form a substantially U-shaped structure. The limbs have aligned apertures and the terminal portions have mutually engageable fastening means, so that, when closed, the clip defines a frame-like structure which tightly and resiliently embraces and grips two bars, rods or like elongate members transversely

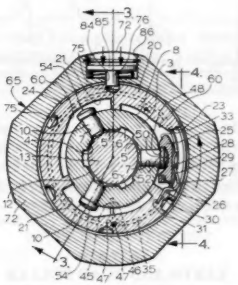


of, e.g., at right angles to, each other. A typical application of the clip is an assembly of such elongate members defining a television aerial system.

3,827,816
COUPLING DEVICE

William H. Knapp, Naperville; Elmer M. Kesl, Downers Grove, and Robert C. Miner, Clarendon Hills, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Oct. 20, 1972, Ser. No. 299,475
Int. Cl. F16b 7/00
U.S. Cl. 403—322 **10 Claims**



A shielded automatic drive shaft knuckle coupler having a hub with a splined shaft-admitting bore and radial openings mounting detent pins intersecting the bore, the detent pins being held in locked position by a cam ring which is rotatable about the hub to release position whereat a releasable latch engages one of the pins. The latch is released by the engaged pin when said pin is moved out of the bore during insertion or withdrawal of the shaft to which the knuckle is coupled or to be coupled.

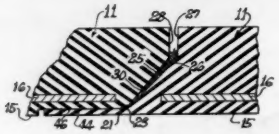
3,827,817
ROADWAY JOINT SEAL ASSEMBLY AND END DAM SECTION

Daniel E. Czernik, Hinsdale, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Apr. 7, 1972, Ser. No. 242,087
Int. Cl. E01c 11/12
U.S. Cl. 404—67 **4 Claims**

An end dam assembly for sealing a gap between adjacent roadway or deck slabs. Elongate end dam sections are assembled in an end-to-end array. One of the end faces of a secton inclines at a predetermined angle to the vertical, and the other end face inclines at an angle slightly different from the predetermined angle so that when two like dam sections and one of each of the faces are butted together, a channel open at

the top and converging downwardly is formed by the opposed end faces. The inclined portions of the opposed faces may terminate below the upper surface of an end dam section, with

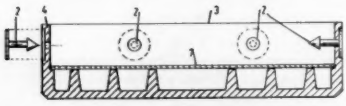


the end faces each including a vertical portion extending upwardly from the inclined portion to the upper surfaces of the adjacent end dam section.

3,827,818
CONCRETE TILE

Johannes Hubertus Ruyters, Roosendaal, Netherlands, assignor to Rubberfabriek "Indiana" N.V., Roosendaal, Netherlands

Filed Jan. 2, 1973, Ser. No. 320,689
Claims priority, application Netherlands, Nov. 21, 1972, 7215753
Int. Cl. E04f *13/08*
U.S. Cl. 404—33 **11 Claims**

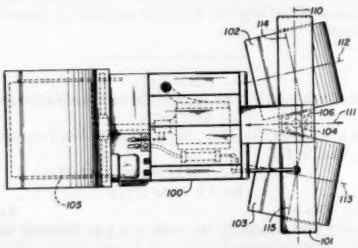


Concrete tile in which a rubber or synthetic-resin cover plate is anchored and provided in the side facing the tile with ridges forming hollow spaces with the tile and in which the anchorage is formed by anchor elements of a hard material inserted into the side rims of the cover layer.

3,827,819
EARTH AND ROAD ROLLER

Hartley P. Dermond, 1385 Cumberland Rd., South Venice, Fla. 33595

Filed Feb. 23, 1972, Ser. No. 228,526
Int. Cl. E01c *19/23*
U.S. Cl. 404—126 **2 Claims**

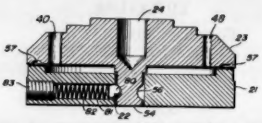


A roller for treating earth and pavement surfaces having a pair of drums skewed from the direction of roller travel, the skewed drums being skewed so as to have opposite and approximately equal effects on the steering of the roller.

3,827,820
DRILL DISPENSING CONTAINER

John T. Hoffman, 1604 E. Greenleaf St., Allentown, Pa. 18103

Division of Ser. No. 173,418, Aug. 20, 1971, Pat. No. 3,727,771. This application Jan. 29, 1973, Ser. No. 327,646
Int. Cl. B65d *85/20*
U.S. Cl. 403—165 **1 Claim**

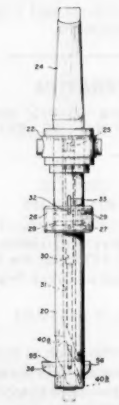


A drill dispensing container with base plate having a central shaft receiving hole and holder with depending shaft for rotary motion therewithin. The plate has an axial alignment mark and three spring-loaded ball bearings radially disposed to the mark. The plate has axial cylindrical ball receiving pockets with partially covering lips for limiting bearing travel, and has a concentric recess forming an external rim of sufficient depth that extending bearings do not pass the plane thereof. The holder has through drill-receiving apertures axially disposed therewithin about three concentric circles which are staggered so that no two apertures are aligned along a common holder radius. The holder includes indicia for values of drills carried therewithin, each being radially co-aligned with its corresponding aperture. Indexing means positively co-align the indicia to the mark. Axial shaft motion with respect to the plate is restricted via a circumferential shaft groove restrained by a spring-biased bearing directed thereagainst, the bearing being housed within a radial aperture engaging with the hole. A set screw directs the bearing against the groove, permitting rotation, and restricting axial shaft motion with respect to the plate. The container is indexed via a separate spring loaded bearing disposed on the rim engaging within one of several indentations on the holder surface which faces the plate. The indentations are circularly located having its center at the holder axis, and are at least equal to the total through apertures.

3,827,821
AXIALLY ACTUATED BACK SPOT FACING TOOL

Henry F. Swenson, 22 Holmehill Ln., Roseland, N.J. 07068

Filed Apr. 9, 1973, Ser. No. 348,924
Int. Cl. B23b *51/00, 51/06*
U.S. Cl. 408—59 **10 Claims**



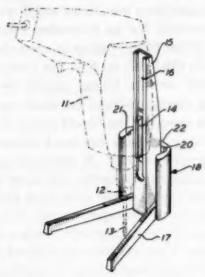
This invention pertains to a back spot facing tool whose cutting blade is pivotally mounted on a spindle body and is axi-

ally actuated by a plunger rod so as to be moved to either a cutting or a concealed condition in response to either a manual manipulation or to a hydraulic actuation of this rod. The back spot facing cutting blade is mounted with its retaining pivot point offset so that one side of the blade in a cutting condition extends a greater distance from the spindle body causing a greater pressure to be exerted on this blade cutting portion than on the opposite side blade cutting portion. The blade portion developing the greater pressure is supported by an adjustable set screw which is adjusted to provide means to establish the exact face angle of back spot face cutting desired by the tool. A precise grinding fixture is also disclosed and carries the blade at a determined condition to its support surface so as to establish the desired cutting blade angles.

3,827,822
GUIDED TOOL

David B. Converse, 41 Brookwood St., East Orange, N.J. 07017

Continuation of Ser. No. 267,929, June 29, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,257
Int. Cl. B23b *45/14*
U.S. Cl. 408—110 **1 Claim**

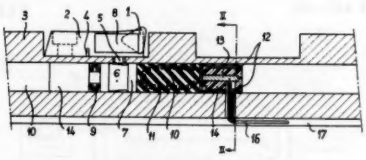


A guided tool for controlling the attack of a tool against a work face wherein a keyway slidably mates with a key on a tool housing, so that the tool is guided toward a work piece in a predetermined attitude.

3,827,823
CUTTING TOOL ADJUSTMENT DEVICES

Francois G. Lhomme, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Jan. 22, 1973, Ser. No. 325,344
Claims priority, application France, Jan. 28, 1972, 72.02908
Int. Cl. B23b *29/034*; **B26d** *1/12*; **B23q** *3/00*
U.S. Cl. 408—158 **7 Claims**

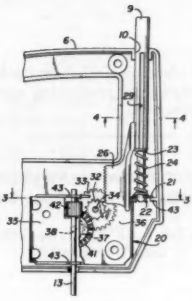


This device for adjusting through a moderate range of positions each tool insert of a multiple-tool assembly under the control of a pusher comprises a pressure member consisting of a ramp formed in a piston and responsive to the expansion of a member in which an electric heating resistance is embedded in the specific case of a bore machining bar comprising a plurality of insert tools, the tool carriers are disposed in cavities communicating with an axial hole of the bar enclosing the piston, the expansion member and its resistance, all the lead-in wires of the various resistances being sealed in longitudinal external grooves formed on the surface of said bar.

3,827,824
TOY MIXER

Gerald A. Waak, Manitowoc, Wis., assignor to Aluminum Specialty Company, Manitowoc, Wis.

Filed Sept. 11, 1972, Ser. No. 287,762
Int. Cl. A47j *43/10, 43/07*; **A63h** *3/52*
U.S. Cl. 416—69 **2 Claims**

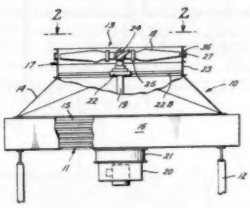


A toy food mixer has a pair of mixer elements extending from a hand-held housing containing a spring action driving mechanism operated by a push button at the top of the housing.

3,827,825
AXIAL FLOW FAN ASSEMBLY

Kelly V. Shipes, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed May 29, 1973, Ser. No. 364,951
Int. Cl. F01d *25/24, 25/26*
U.S. Cl. 415—219 **6 Claims**



An axial flow fan assembly wherein the ring in which the fan rotates comprises a cylindrical body having a box-shaped stiffening ring about its outer circumference.

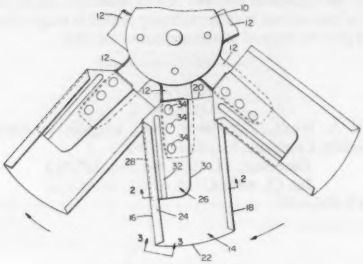
3,827,826
FLEXIBLE BLADED FAN WITH STRENGTHENED LEADING EDGE

Karl H. Strick, Chatham, Ontario, Canada, assignor to Foram Corporation, East Providence, R.I.

Filed Aug. 20, 1973, Ser. No. 390,010
Int. Cl. F04d *29/36*
U.S. Cl. 416—132 **4 Claims**

A flexible bladed automotive cooling fan having a reinforcing member on the upstream side of the blade, the reinforcing

member radially spaced inwardly from the tip of the blade a distance in the range of 25–50 percent of the radial extent of



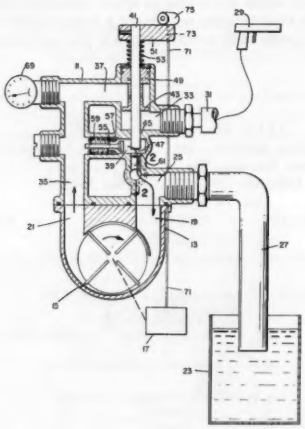
the blade and the blade reversely bent continuously along its leading edge overlying the reinforcing member at an inner portion of the reverse bend.

3,827,827

LIQUID FLOW VALVE SYSTEM

Raymond Roger Hill, 11 White Cottage Rd., Angwin, Calif. 94508

Filed July 6, 1972, Ser. No. 269,494
Int. Cl. F04b *49/08*
U.S. Cl. 417—28 **14 Claims**



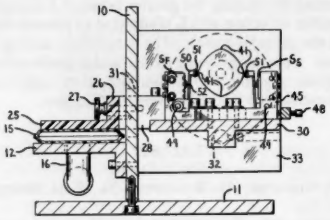
A system of distributing liquid flow to either a primary outlet opening or a secondary outlet opening. Each outlet opening has a valve for opening and closing a fluid passage thereto, the two outlet valves being mechanically connected so that when one is open the other is closed. The two mechanically connected valves are ordinarily resiliently urged so that the primary outlet opening is closed and the secondary outlet opening is open to allow fluid to flow therethrough. When the primary outlet opening is open to the atmosphere in order to obtain a liquid flow therefrom, the valve assembly moves under fluid pressure to open the primary outlet and close the secondary outlet. One application of this assembly disclosed herein is for a portable pumping assembly wherein the secondary outlet opening serves as a liquid bypass to the inlet of the pump when a liquid flow through the primary outlet opening is not desired.

3,827,828

FLUID PUMP CONTROL SYSTEM

Miles Lowell Edwards, 13191 Sandhurst Pl., Santa Ana, Calif. 92705

Filed Dec. 26, 1972, Ser. No. 318,520
Int. Cl. F04b *49/06*
U.S. Cl. 417—43 **4 Claims**



This device controls the amount of blood flow in an extracorporeal blood circuit of a patient requiring long term profusion to prevent the excessive blood damage as is likely to occur in the usual heart-lung machines employed during surgery if it were to be used for an extended time. The device regulates the speed of the blood pump in accordance with rate of flow of blood from the body so that the pump does not impose a back pressure on the blood supply by running too slowly and does not create suction pressure on the body by running too fast. The speed of the blood pump is controlled by a potentiometer having a slider contract driven in opposite directions by a reversible motor. A constant speed rotating cam intermittently actuates one or the other, or both, of a pair of switches on opposite sides of the cam. One switch energizes the potentiometer motor for rotation in one direction and the other switch energizes the potentiometer motor for rotation in the opposite direction. The switches are shifted relative to the cam by a platen bearing against a tubular bladder in the blood inlet to the pump. As the bladder expands, the pump is speeded up and as the bladder contracts, the pump is slowed down.

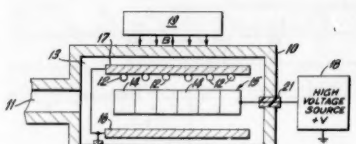
In addition to normal adjustment of pump speed to comply with normal small variations in blood flow, an emergency safeguard is provided which causes the pump to stop immediately in case the blood supply is abruptly interrupted such as would occur if the blood supply tubing were suddenly closed by a kink or by an attendant stepping on it. If the blood pump were to continue to operate when the bladder is empty, the pump could draw fatal air bubbles into the blood stream.

3,827,829

SPUTTER-ION PUMP

Theodore K. Tom, Sunnyvale, Calif., assignor to Veeco Instruments Inc., Plainview, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,451
Int. Cl. F04b *37/02*
U.S. Cl. 417—49 **6 Claims**



In a sputter-ion pump employing a high vapor pressure electrode, burn out of the high vapor pressure electrode is

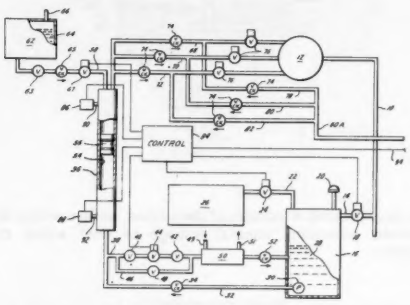
eliminated and the inert gas pumping ability of the ion pump is significantly improved by controlling the effective area of the high vapor pressure electrode surface facing the discharge so as to modulate the intensity of the ion beam arriving at the high vapor pressure surface.

3,827,830

INTENSIFIER SYSTEM

Robert Eldon Van Horn, 2308 W. Coronado, Orange, Tex. 77630

Filed May 3, 1972, Ser. No. 249,958
Int. Cl. F04b *17/00*; C08d *3/04*
U.S. Cl. 417—225 **1 Claim**



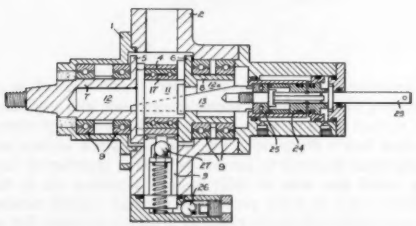
An intensifier system for supplying catalyst to a polyolefin reactor wherein the pressure of the olefin is applied to a vessel containing a hydraulic fluid with a pump submerged in the hydraulic fluid, and the pump pressurizes one end of a free piston cylinder to force catalyst from the other end of the cylinder into the reactor. An identical system supplies catalyst to the reactor while the first system is being recharged. Recharging of the system is accomplished by relieving the pressure in the vessel to a low pressure, and applying an intermediate pressure to force catalyst from a catalyst storage container into the catalyst end of the free piston cylinder, thereby causing the hydraulic fluid to flow from the cylinder back into the vessel.

3,827,831

CONTROL FOR RADIAL TYPE PUMPS OR THE LIKE

Raydon Ayers Lines, 2 Rasp Ave., Medindie, Australia (5081)

Filed May 15, 1972, Ser. No. 252,998
Int. Cl. F04b *1/04*, *49/00*
U.S. Cl. 417—273 **6 Claims**



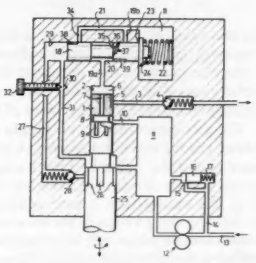
A pump comprising cylinders arranged around a hollow housing carrying a drive shaft having a radially adjustable member on it which is displaced by a wedge to vary the eccentricity of a sleeve which engages the pistons in said cylinders to vary the pumping capacity, the wedge being positioned in the shaft and having means to move it axially in the shaft to give the said volumetric variation.

3,827,832

MEANS FOR REDUCING FUEL DELIVERY OF FUEL INJECTION PUMPS IN THE LOW RPM RANGE

Werner Faupel, Gerlingen, and Karl Zibold, Stuttgart-Vaihingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 18, 1972, Ser. No. 298,761
Claims priority, application Germany, Oct. 19, 1971, 2151884; July 14, 1972, 2234557
Int. Cl. F02m *59/34*
U.S. Cl. 417—289 **9 Claims**



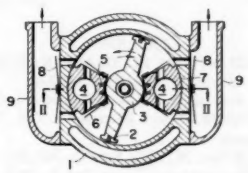
In a fuel injection pump in which the fuel quantities delivered for injection are controlled by bypassing one part of the fuel from the pump work chamber during the pressure strokes of the pump piston by a control edge of a slidable member that controls a bypass channel in an rpm-dependent manner, for reducing the delivered fuel quantities in the low rpm range at any load condition, said bypass channel is first opened by a throttle and subsequently opened by said control edge.

3,827,833

ROTOR COOLING DEVICE IN AN OSCILLATION TYPE COMPRESSOR

Nozomu Jinkawa, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Hyogo, Japan

Continuation of Ser. No. 231,932, March 6, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,183
Claims priority, application Japan, Mar. 4, 1971, 46-13884
Int. Cl. F04c *21/00*
U.S. Cl. 417—482 **1 Claim**



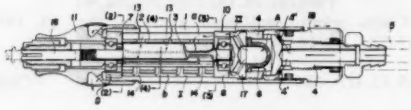
A rotor cooling device for an oscillation type compressor, wherein one end of the rotor is extended axially along the axis of rotation thereof. The extended portion of the rotor is surrounded by a housing in which a cooling liquid injection means and a cooling liquid discharging means are provided. The rotor is provided with an axial hole in the central portion thereof through which cooling liquid is supplied from said injection means and discharged by the discharging means for cooling the rotor.

3,827,834

SMALL DIAMETER CYLINDRICAL AIR MOTOR FOR DRIVING GRINDERS AND THE LIKE

Masakazu Kakimoto, 78, Azaooshima Ooazaasda, Nishincho, Aichi-gun, Aichi-ken, Japan

Filed July 25, 1972, Ser. No. 274,905
Claims priority, application Japan, Feb. 19, 1972, 47-17424
Int. Cl. F01c 21/00; F04c 15/00, 29/00
U.S. Cl. 418—15 9 Claims



The air motor has substantially the size of a standard fountain pen and includes an extruded outer cylindrical casing formed with a circular cross-section eccentric inner surface which has annular grooves in its forward part and a smooth surface, substantially coincident with the bases of the grooves, in its rear part. The grooves constitute air supply and exhaust passages, a retainer groove and a pin groove. A front retainer closes the forward end of the casing and has a tongue projecting into the retainer groove to maintain a predetermined angular orientation in the casing, and a rear retainer is seated against the ribs defining the grooves in the forward portion of the casing and has a tongue projecting into the retainer groove to maintain a relative angular orientation with respect to the front retainer. A motor cylinder is mounted in the casing between the two retainers and has air supply and exhaust ports communicating with the air supply and exhaust passages, respectively. A vane type rotor is rotatably supported in the two retainers, through bearings, and is eccentric to the motor cylinder. The forward end of the rotor is formed with a shaft by means of which a grinder or another tool can be secured to the rotor. The portion of the casing rearwardly of the rear retainer constitutes an air supply and control chamber in which there is an air filter means, and the air passing through the filter means flows through supply passages in the rear retainer into the air supply passage. A connection is provided at the rear of the casing for connecting the air motor to a source of air under pressure, and a manually operable grip threaded on this connection controls the supply of air under pressure to the supply and control chamber. In a modification of the air motor, the exhaust air flows rearwardly along the exterior surface of the motor cylinder and through sound absorbing means to exhaust ports leading to the atmosphere or to an exhaust line.

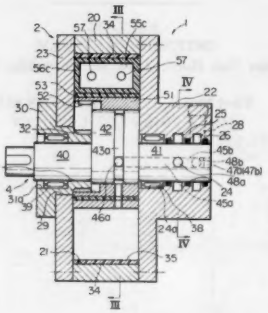
3,827,835

LOW SPEED ROTARY FLUID APPARATUS WITH ELASTIC SEALING LINER

Yasuo Higuchi, Komaki, and Yoshio Mitsumura, Gifu, both of Japan, assignors to Chukyo Electric Co. Ltd., Komaki-shi, Aichi-ken, Japan

Filed Nov. 29, 1972, Ser. No. 310,267
Claims priority, application Japan, Dec. 3, 1971, 46-97186
Int. Cl. F01c 21/00; F04c 15/00, 29/00
U.S. Cl. 418—56 6 Claims

In a fluid apparatus for low speed continuous rotation having a rotor rotatable continuously within a cylinder, a tubular seal material of synthetic resin such, for example, as fluoric resin is fitted into the cylinder in contact with the inner periphery of the cylinder, the seal material is compressed axially by a pair of end covers closing the ends of the cylinder, and the movable rotor is provided with a square packing in contact with the inner peripheral surface of the seal material and the inner surfaces of the end covers. The seal material and the square packing cooperate with each other to provide



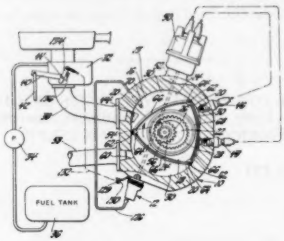
complete sealing at corners of the contact surface within the cylinder preventing internal leakage of fluid within the cylinder.

3,827,836

METERING PUMP

Elias W. Scheibe, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 14, 1973, Ser. No. 360,328
Int. Cl. F01d 1/36; F03b 5/00
U.S. Cl. 418—88 12 Claims

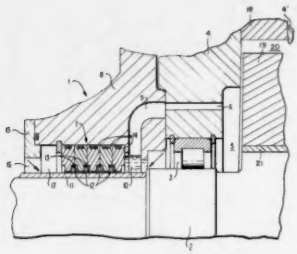


An internal combustion rotary engine is provided with an oil metering pump having an engine driven rotor with a cylindrical surface and a pressure control member with a cylindrical surface that is eccentric to the other cylindrical surface and cooperates therewith to provide an annular chamber of varying radial size with an inlet passage supplying oil to this chamber and an outlet port in the pressure control member that is movable about the chamber to receive pressure that increases with increasing rotor speed and also with decreasing radial size of the chamber and the rotor member also having a timing port for intermittently delivering fluid from the outlet port to an outlet passage to effect oil metering for engine seal lubrication at a rate which increases with increasing engine speed and also with increasing throttle opening.

3,827,837
HOT-GAS ENGINE

Konstantin Pattas, Winterbach, and Hans-Peter Glathe, Neustadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Nov. 27, 1972, Ser. No. 309,922
Claims priority, application Germany, Nov. 27, 1971, 2158964
Int. Cl. F01c *19/00*
U.S. Cl. 418—104 12 Claims

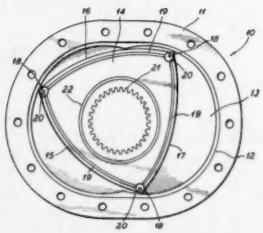


A hot-gas engine constructed as rotary piston engine of trochoidal type which includes a piston supported on an eccentric of an eccentric shaft which together with a housing casing and with lateral housing parts arranged on both sides of the housing casing forms working chambers for the working medium; the eccentric space is thereby filled with the working medium under pressure while the eccentric shaft is sealed off on the outside of the bearing support by a labyrinth seal and a liquid seal.

3,827,838
OIL SEAL FOR ROTARY PISTON ENGINES

Herbert F. Prasse, Town & Country, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

Filed Jan. 5, 1973, Ser. No. 321,445
Int. Cl. F04c *27/00*
U.S. Cl. 418—142 16 Claims

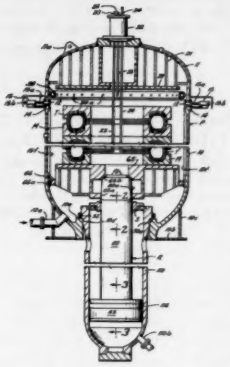


An oil seal for rotary piston engines wherein the oil control seal is received in a piston groove and has a secondary seal in an axial end face groove in the oil control seal, the secondary seal urged against the back wall of the piston groove by a spring.

3,827,839
VULCANIZING PRESS FOR RUBBER PRODUCTS

Raymond E. Pechacek, and Henry J. Clay, both of Houston, Tex., assignors to Hahn & Clay, Houston, Tex.

Filed Mar. 9, 1973, Ser. No. 339,861
Int. Cl. B29h *5/20*
U.S. Cl. 425—34 7 Claims

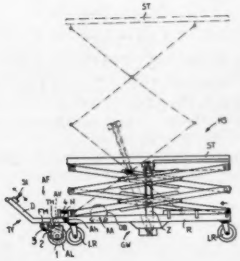


A vulcanizing press for rubber products such as vehicle tires, wherein a plurality of molds for the rubber products are pressed and held together during vulcanization of the rubber products in a steam chamber by a pressure operated ram which has bearing surfaces at its upper and lower ends and an intermediate floating seal therewith for distributing the bearing loads to only two longitudinally spaced areas while maintaining a seal between the ram and the pressure chamber even when the ram is subjected to horizontal or lateral shifting due to temperature changes, loading or other causes. Additionally, a high pressure seal is located at the lower bearing remote from the heat in the steam chamber and where minimum lateral loading occurs and seal clearance is unnecessary. A safety release is provided on the ram to automatically release the pressure on the ram piston when the lateral forces exceed a predetermined amount.

3,827,840
MOBILE CONCRETE CEILING MOLD PLATFORM

Laurenz Kistler, Chamerstrasse 117, Zug, Switzerland

Filed Feb. 8, 1972, Ser. No. 224,480
Claims priority, application Switzerland, Feb. 12, 1971, 2078/71
Int. Cl. E04g *11/36*
U.S. Cl. 425—62 4 Claims



A selectively self-propelled cart has mounted thereon an extendable platform which can be extended, for example by a

scissor arrangement, to ceiling height to form a support mold for concrete. The cart has a separable drive unit, and both the extension mechanism for the scissors as well as the drive unit are operated by a compressed fluid, each with its separate operating motor or cylinder. The compressed fluid, such as oil is obtained from a pump driven by a self-contained prime mover such as a gasoline engine or a battery supplied electric motor, the prime mover and the pump, or compressor for the operating fluid being removable, and selectively connectable separable either the extension mechanism for the scissors or the sepable drive unit for the cart carrying the mold frame.

3,827,841

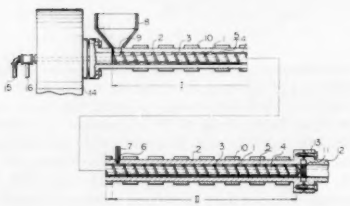
EXTRUSION APPARATUS FOR USE IN THE PRODUCTION OF THERMOPLASTIC RESIN FOAMS

Isami Kawai, Ageo; Atsuro Nishikawa, Osaka; Akira Iwata, Osaka, and Kohei Sugiyama, Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 22, 1970, Ser. No. 47,980

Int. Cl. B29d *27/00*

U.S. Cl. 425—4 C **6 Claims**



An extrusion apparatus including an extruder comprising an extruder barrel, an extruder screw and an injection port for blowing agent and a cooling device connected to the forward end of said extruder, said extruder screw consisting of a compression zone wherein a volume in unit pitch of the screw decreases progressively in the extrusion direction and a metering zone wherein a volume in unit pitch of the screw is 1.6 – 2.0 times a volume in the final unit pitch of the screw in the compression zone and is constant in the extrusion direction, said injection port being provided above the metering zone, and said cooling device consisting of a coolant vessel disposed coaxially with said extruder, a plurality of pipes in said coolant vessel for dividing the flow of resin spaced apart from each other, an adapter for conducting the flow of resin from said extruder to said pipes, and an adapter for gathering the divided flows of resin extruded from said pipes.

3,827,842

DEVICE FOR COOLING EXTRUDED PLASTIC TUBING

Klaus Kneller, Nurensdorf; Jean Trub, Grand-Lancy/Geneve, and Jean Francois Gregoire, Aire/Geneve, all of Switzerland, assignors to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

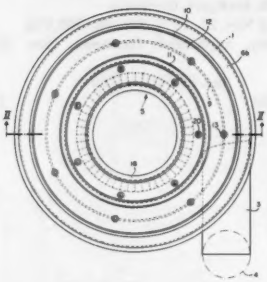
Filed Oct. 10, 1972, Ser. No. 296,087

Claims priority, application Switzerland, Oct. 13, 1971, 14959/71

Int. Cl. B29d *23/00;* **B29c** *25/00*

U.S. Cl. 425—72 **2 Claims**

A device for cooling extruded plastic tubing for mounting at the outlet end of an extrusion die and having a spiral (scroll-shaped) tank whose inlet communicates with a source of gaseous fluid such as air to be fed radially and uniformly onto the extruded tubing through an annular passage communicating with the spiral tank and extending coaxial with the axis of extrusion. The annular passage terminates in an annular slot



forming the fluid outlet directed toward the axis of extrusion. At least two annular baffle plates are arranged in the annular passage for rendering uniform the flow of fluid.

ERRATUM

For Class 425—126 see:
Patent No. 3,827,856

3,827,843

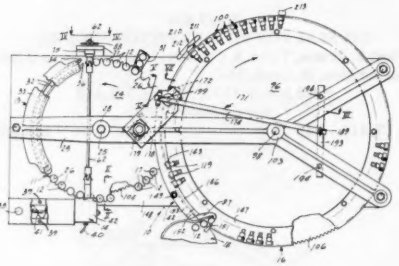
APPARATUS FOR LINING BOTTLE CROWNS WITH THERMOPLASTIC MATERIAL

John H. Blouch, Terre Haute, Ind., assignor to Sycamore Manufacturing Company, Inc., Terre Haute, Ind.

Continuation of Ser. No. 221,096, Jan. 26, 1972, abandoned, Division of Ser. No. 43,513, June 4, 1970, abandoned. This application Aug. 20, 1973, Ser. No. 389,961

Int. Cl. B29c *1/04*

U.S. Cl. 425—127 **8 Claims**



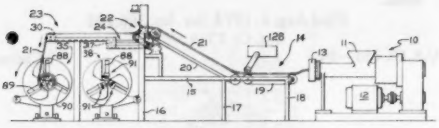
Apparatus for lining closure caps or bottle crowns with thermoplastic material includes conveying the crowns to dispensing means wherein a metered quantity of thermoplastic material, heated to a moldable or plastic state, is deposited into the crown and then transferring the filled crowns to a forming station. In order to mold the material into a sealing gasket configuration a forming member is resiliently driven toward a central portion of the crown to substantially instantaneously squeeze the material between the forming member and the crown wall portion while enabling a portion of the material to flow into an annular space surrounding a periphery of the forming member. The forming member is held under spring pressure in the molding position and for a time interval selected to enable sufficient air cooling to se the material.

3,827,844

APPARATUS FOR MAKING TIRES

Walter C. Frey, Akron; Claude Mullender, Barberton, and Norman E. Reinhart, Cuyahoga Falls, all of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,716
Int. Cl. B29d *31/00; B29f 3/00*
U.S. Cl. 425—142 **9 Claims**



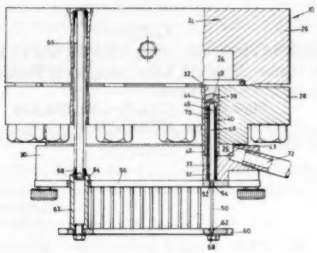
An apparatus for making solid tires by utilizing an extruder that directs a predetermined length of strip of rubber onto a rotating chuck that supports a rim which is rotated at a preset speed in accordance with the diameter of the rim.

3,827,845

PRESSES

Rofe Arthur Matthews, Johannesburg, South Africa, assignor to AE & CI Limited, Johannesburg, Transvaal, South Africa

Filed Feb. 26, 1973, Ser. No. 336,077
Claims priority, application South Africa, Mar. 29, 1972, 72/2167
Int. Cl. B29c *3/00*
U.S. Cl. 425—346 **23 Claims**



This invention relates to press heads and is concerned with such press heads for use in compacting particulate material into self supporting or substantially self supporting articles. The invention is particularly, but not exclusively, concerned with such press heads for use in the manufacture of elements in the explosives industry as detonator charges and time delay elements.

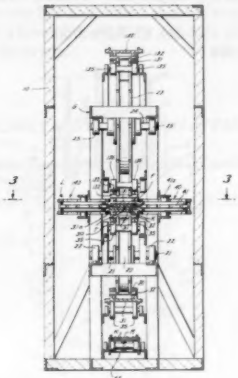
3,827,846

APPARATUS FOR MAKING CURED TIRE TREAD STRIP

Herold J. Weiler, 1239 Thayer Dr., Asheboro, N.C. 27203, and John E. Weiler, 4808 Balcones Dr., Austin, Tex. 78731

Filed Aug. 22, 1972, Ser. No. 282,850
Int. Cl. B29h *5/02, 3/06*
U.S. Cl. 425—371 **2 Claims**

Apparatus for making cured tire tread in strip form continuously, wherein uncured rubber is introduced between endless track molding units having means therewith for confining and molding the rubber in a strip with a predetermined tire tread pattern on one side of the strip, and wherein the uncured rubber is cured while being molded between said molding units and moved therewith to discharge in cured form as a strip from the apparatus. One of the molding units includes an endless flexible band which cooperates with molds carried by the other molding unit, and preferably having the molds carried by trays which are separable from the rest of the apparatus. The separable trays and molds may be moved in a sequence through the longitudinal reach between the molding units during the molding and curing of the tire tread, then



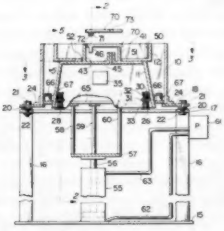
discharged therefrom, and then returned to the point of entry into such reach for re-use, so that a continuous supply of such trays and molds is always present between the molding units. The molding units are automatically locked together in the area thereof in which the molding and curing take place, so that the pressure of the rubber in the molds is controlled and the rubber is confined conforming to the molds during curing.

3,827,847

APPARATUS FOR FORMING BOX-LIKE ARTICLE AND LID THEREFOR

Lumon D. Weaver, P.O. Box 631, Flomaton, Ala. 36441

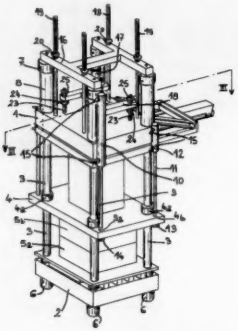
Filed Feb. 2, 1973, Ser. No. 329,122
Int. Cl. B28b *21/14*
U.S. Cl. 425—424 **10 Claims**



Apparatus for forming in one operation a molded article having box-like sides such as a concrete meter box, and a molded covering lid therefor. A cavity in the shape of connected sides of a box is formed between an inner form and a surrounding outer form. An open top lid form rests on the top of the inner form, its outside surface extending out beyond the top of the inner form to define a shoulder and an upper extension of the cavity. The cavity and the lid form are filled with a settable material and vibrated. A power unit then raises the box-like article by engaging a pallet beneath the article at the

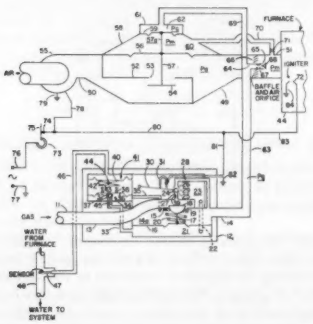
bottom of the cavity, the box-like article being capable of carrying the lid form upwardly with it by engagement of the finished article with the shoulder of the lid form.

3,827,848
MOLDING PRESSES
Henry Massonnet, Nurieux (Ain), France
Filed Oct. 16, 1972, Ser. No. 297,673
Claims priority, application France, Oct. 29, 1971, 71.39880
Int. Cl. B29c *3/00*
U.S. Cl. 425—406 **6 Claims**



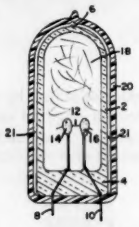
In an injection press of the vertical type, the locking platen is made in two parts which form a locking jack, the movable member of which is connected to a track. A movable balk member suspended from a fixed guide can be brought to a position beneath the said movable member of the locking jack in order to lock the moving plate of the press. Alignment of the track and of the guide is effected by the co-operation of the oblique ends of these two elements.

3,827,849
COMBUSTION CONTROL APPARATUS
Lorne W. Nelson, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 20, 1971, Ser. No. 209,612
Int. Cl. F23h *1/02*
U.S. Cl. 431—90 **10 Claims**



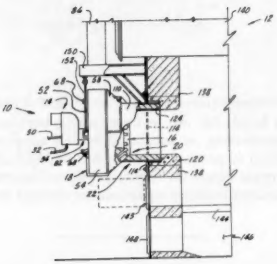
Combustion control apparatus wherein a thermostat controls the operation of a combustion air blower and a modulating type of gas valve, a heat load sensor modulates the gas flow, and means responsive to the rate of gas flow and air flow adjusts the air flow to maintain a constant fuel/air ratio for the combustion mixture.

3,827,850
PHOTOFLASH LAMP COATING
John W. Shaffer, and John J. Vetere, both of Williamsport, Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.
Filed Aug. 6, 1973, Ser. No. 386,202
Int. Cl. F21k *5/02*
U.S. Cl. 431—94 **9 Claims**



A photoflash lamp having a protective coating over its glass envelope comprising a vacuum-formed thermoplastic sleeve with longitudinally extending ribs disposed between the plastic sleeve and glass envelope for reducing stress levels in the formed sleeve and for providing thermally insulating air gaps between the sleeve and envelope.

3,827,851
COMBINATION, OIL, GAS, AND/OR SOLID BURNER
Dale E. Walker, Winfield, Kans., assignor to Peabody Gordon-Piatt, Inc., Winfield, Kans.
Filed Oct. 3, 1972, Ser. No. 294,620
Int. Cl. F23c *5/28*
U.S. Cl. 431—175 **7 Claims**

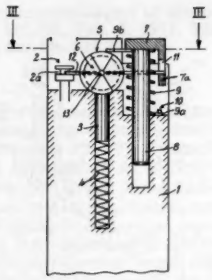


A burner that is adapted to burn oil, gas, and/or solid fuels has an inner oil and/or gas burner, a primary combustion chamber in coaxial relation with the conventional burner, a passageway surrounding the primary combustion chamber in flow communication therewith and a source of oxygen containing gas and source of combustible particulate solid material, and a conduit in communication with the passageway and mountable in a furnace wall. The burner is adapted in operation to burn oil and/or gas fuels in the combustion chamber, and simultaneously or alone burn combustible particulate solid material passed through the passageway into the combustion chamber's outlet.

3,827,852
AUTOMATIC CIGARETTE LIGHTER

Pierre Chevallier, Sainte-Foys-les-Lyons, France, assignor to Etablissements Genoud & Cie and Societe Anonyme, both of Venissieux, France

Filed Dec. 21, 1972, Ser. No. 317,254
Claims priority, application France, Jan. 7, 1972, 72.00871
Int. Cl. F23f 1/04
U.S. Cl. 431—254 **4 Claims**

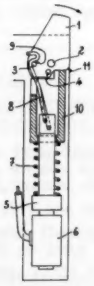


In this automatic cigarette lighter a restoring spring for an operating key or pushbutton is also adapted, with an upper, straight end disposed under the head of the operating member to act as a pawl for actuating a ratchet associated with a serrated sparkling wheel, this spring end having its maximum flexibility in the normal position of the operating member and its maximum rigidity in the depressed position of that member. In a lighter operating on gaseous fuel a notch is formed in the operating member and engaged with play by one arm of a two-armed lever connected to a burner and valve assembly, the upper and lower ends of that notch controlling the opening and the closing, respectively, of the burner valve.

3,827,853
CIGARETTE LIGHTER WITH PIVOTING CONTROL MEMBER

Pierre Chevallier, Sainte-Foy-Les-Lyon, France, assignor to Etablissements Genoud & Cie and Societe Anonyme, both of Venissieux, France

Filed Apr. 5, 1973, Ser. No. 348,108
Claims priority, application France, Apr. 14, 1972, 72.13881
Int. Cl. F23q 2/16
U.S. Cl. 431—255 **7 Claims**

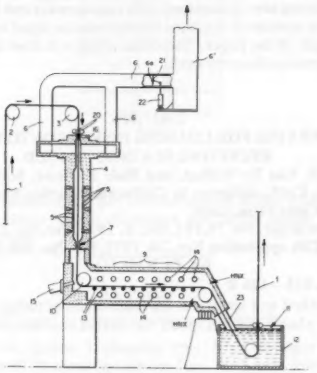


A cigarette lighter with an ignition circuit including a piezoelectric crystal is actuated by a key pivotally supported on a housing wall for manual swinging in a predetermined direction from a normal position. The key carries two pairs of studs projecting from opposite sides thereof, the studs on each side being eccentrically disposed in angularly offset relationship as seen in the direction of swing. A striker confronting the piezoelectric crystal, urged toward the latter by a compression spring, is tied to a wire link having a hook-shaped extremity which straddles the key and engages the first pair of studs in the normal position. When the key is swung into its working position, these first studs initially entrain the link to compress the spring; toward the end of the swing, the second pair of studs bear upon the link and deflect it out of engagement with the first studs whereby the spring expands and drives the striker against the crystal.

3,827,854
AUTOMATIC METAL PROTECTING APPARATUS AND METHOD

William E. Gildersleeve, 44 Taylor Rd., Conshohocken, Pa. 19428

Filed Oct. 26, 1973, Ser. No. 410,220
Int. Cl. F27b 9/28
U.S. Cl. 432—19 **19 Claims**



When a metal strip passing through a furnace is overheated, the furnace is automatically shut down in a special way to prevent outside air from rushing in to cause strip oxidation in critical furnace areas. The fuel-air mixture in the furnace is gradually reduced to a low rate which is substantially above zero, and then continues at that low rate for a definite period of time. Also, a non-oxidizing gas such as nitrogen is gradually introduced into the furnace at a gradually increasing rate, reaching its full flow after a definite period of time, while maintaining positive pressure in the furnace chamber. The nitrogen flows for a definite period of time at full volume, and then the gas-air fuel mixture is cut off, still maintaining positive pressure in the furnace chamber. This avoids leakage of air into the furnace; further, exhaust stack dampers, which are initially open, as required automatically to maintain positive furnace pressure, are gradually and automatically brought to a closed position to assist in preventing outside air from being drawn into the furnace chamber.

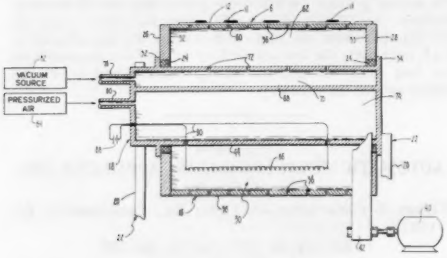
3,827,855
TONER FIXING METHOD AND APPARATUS

David Edward Blake, Woodside, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.

Filed Oct. 12, 1971, Ser. No. 188,315
Int. Cl. F27b 9/14
U.S. Cl. 432—60 **11 Claims**

Toner applied to paper sheets in electrostatic copying machines is fixed by wrapping the sheet about a heated drum

with the toner disposed on the side of the sheet facing away from the drum. The sheet is moved into intimate contact with the drum by providing a multiplicity of passageways from the drum exterior to its interior and applying a vacuum to thereby draw the sheet against the drum. After the sheet has been retained on the drum for a sufficient length of time to fix the toner a pressurized gas is applied to the passageways to blow the paper sheet off the drum. To minimize air flow while the passageways are vacuumized such passageways can be applied to only a portion of the drum circumference equal in length to the length of the paper. The drum rotation is then indexed to correspond to the copy cycle.



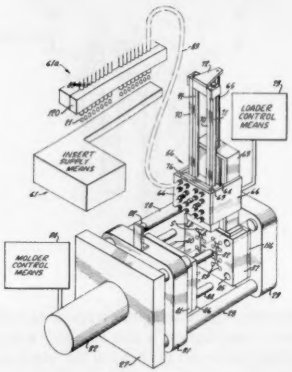
3,827,856

APPARATUS FOR LOADING INSERTS ONTO INSERT RECEIVING SEATS OF A MOLD

Roger D. Van De Walker, and Blair E. Howe, both of Costa Mesa, Calif., assignors to California Injection Molding Co., Inc., Costa Mesa, Calif.

Division of Ser. No. 79,191, Oct. 8, 1970, Pat. No. 3,719,396.
This application Nov. 24, 1972, Ser. No. 309,519
Int. Cl. B29f 1/10
U.S. Cl. 425—126 R **8 Claims**

A method and apparatus for mass-manufacturing elongated hollow plastic objects, such as covers for electronic thermometer probes, and ball point pens, having inserts at the ends thereof. The inserts are automatically loaded, by vibrating the same into pockets and then lifting them out of the pockets into suction tubes which pass through a horizontal transfer plate into nests in a vertical transfer plate. Vacuum is employed to maintain the inserts in the nests during movement of the vertical transfer plate to positions adjacent the distal ends of hollow core pins through which air is sucked. The vacuum in the vertical transfer plate is then converted to pressure to cause the inserts to fly across the air gaps to the core pin ends, following which the inserts are maintained on such ends by suction. The mold is then closed to cause the inserts to engage spring-biased plungers, following which the plastic is injected.



CHEMICAL

3,827,857

METHOD OF CLEANING THICK COVERING TEXTILE MATERIALS AND COMPOSITE CLEANING PAD THEREFOR

Paul A. Boulus, 2450 Apricot Lane, Augusta, Ga. 30904

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,430, Feb. 3, 1971. This application Mar. 26, 1973, Ser. No. 344,893

Int. Cl. B08b *3/00*

U.S. Cl. 8—137 **26 Claims**

Thick covering textile materials are cleaned by depositing a textile-cleaning composition prepared from 10–30% by weight of a detergent, 0.5–5.0% by weight of a volatile solvent, 35–65% by weight of an absorptive pulverulent solid, and water on the surface of the thick covering textile material; covering the textile-cleaning composition and said thick textile material with a first porous absorptive pad and a second vapor-impermeable covering so that the first pad and the second covering permit the textile-cleaning composition to penetrate into said thick textile material; leaving said textile-cleaning composition, said first pad, and said second covering in place on said thick textile material until cleaning is complete; and removing said first pad and said second covering from said thick textile material. A composite cleaning pad may be used in the practice of this invention.

3,827,858

DURABLE-PRESS COTTON TEXTILES AND METHOD OF MAKING SAME

Geoffrey A. Byrne, Haddington, Scotland, and Jett C. Arthur, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,180

Int. Cl. C08f *1/24, 3/46;* **D06m** *13/20*

U.S. Cl. 8—184 **2 Claims**

Durable-press cotton textiles are prepared by a chemical process wherein methacrylic acid is grafted onto the textile and the grafted textile is subsequently crosslinked with dimethyloldihydroxyethyleneurea (DMDHEU) without the use of the usual catalysts such as zinc nitrate. The textile is dried to a moisture content of about 0.5%, irradiated in an inert atmosphere to a dosage of 0.5–1 megarad, immersed in a solution of methacrylic acid, methanol and water, washed, dried then immersed in a solution of DMDHEU, water and a wetting agent, dried and cured at 160° C.

3,827,859

FLAME IONIZATION DETECTOR FOR SUPERCRITICAL FLUID CHROMATOGRAPHY

Otto Vitzthum, Bremen, Peter Hubert, Bremen-Lesum, and Manfred Barthels, Bremen, Germany, assignors to Hag Aktiengesellschaft, Bremen, Germany

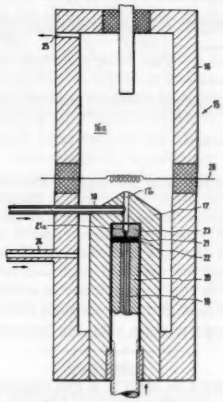
Filed Nov. 28, 1972, Ser. No. 310,166

Claims priority, application Germany, Nov. 30, 1971, P 21 59 339.5

Int. Cl. G01n *31/08, 31/12*

U.S. Cl. 23—254 EF **5 Claims**

A flame ionization detector for use with supercritical fluid chromatography apparatus wherein the reducing valve which transforms the test gas coming from the separating column under supercritical conditions to subcritical conditions before burning at the burner nozzle, is in the form of one or more diaphragms disposed immediately upstream of the burner nozzle outlet and having central bores whose diameters are in the range from 2 to 10 microns.



3,827,860

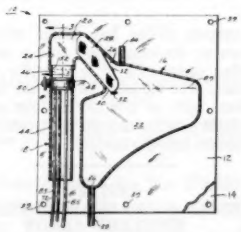
BLOOD OXYGENATION DEVICE

Norbert W. Burlis, University City, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed June 15, 1972, Ser. No. 263,049

Int. Cl. A61m *1/03*

U.S. Cl. 23—258.5 **15 Claims**

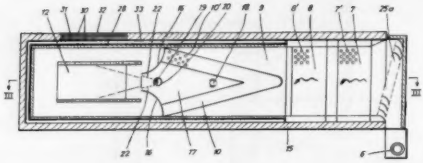


A bubble oxygenation device which includes a cylindrical oxygenator chamber connected in series with a defoaming chamber and a settling chamber, and an oxygen disperser member for delivering oxygen and venous blood to the oxygenator chamber, the disperser member being slidable in the oxygenator to control the oxygenation capacity thereof.

3,827,861
DEVICE FOR THERMAL AFTERBURNING OF EXHAUST AIR

Kurt Zenkner, Hertzstr. 12, Ettlingen, Germany

Filed June 1, 1971, Ser. No. 148,710
Claims priority, application Germany, May 29, 1970, P 20 26 237.7
Int. Cl. F23g 7/06
U.S. Cl. 23—277 C 8 Claims

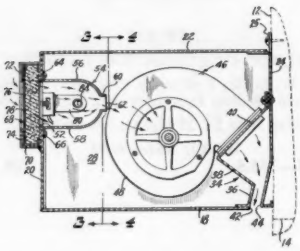


For the thermal afterburning of exhaust air from an industrial plant, such as a drying chamber, which air contains oxidizable foreign bodies, fluid particles or gases, the exhaust air is passed through a pair of heat exchangers in series, then through a burner while supplying air to the burner, and the resultant high combustion gases are led back outside the burning zone in a direction opposite to the original flow direction through the heat exchangers in heat exchange relation with the incoming exhaust air.

3,827,862
AIR CURTAIN DEVICE INCORPORATING ULTRAVIOLET LIGHT

Sigmund F. Berlant, 6023 Ward Lane, P.O. Box 762, Levittown, Pa. 19058

Filed Aug. 10, 1972, Ser. No. 279,330
Int. Cl. A61l 9/00; F24f 9/00
U.S. Cl. 21—74 R 1 Claim



An air curtain device has plural blower assemblies within a housing discharging air into a plenum chamber and thereafter outwardly in a laterally elongated continuous stream. The housing has an air intake upstream of the blowers with an internal air inlet guide having an ultraviolet light source therein to treat and decontaminate air as drawn into the device.

3,827,863
THERMAL AND ABRASION RESISTANT SINTERED ALLOY

Kentaro Takahashi, Ohmiya, Minoru Hasegawa, Saitama, and Kaoru Nara, Kawaguchi, Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

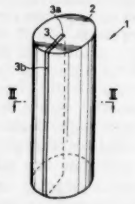
Filed Sept. 5, 1972, Ser. No. 286,393
Claims priority, application Japan, Sept. 2, 1971, 46/66,981
Int. Cl. B22f 1/00
U.S. Cl. 29—182 1 Claim

An alloy prepared by molding a powdery composition comprising 0.6 to 2% of carbon, 1 to 3% of nickel, 10 to 15% of chromium, 0.3 to 1.5% of molybdenum, 5 to 15% of cobalt and 3 to 7% of tungsten, by weight, and the balance being iron, and then sintering the molded composition has large thermal resistance and abrasion resistance.

3,827,864
COMPOSITE EXTRUSION

Tomiyoshi Kanai and Shunta Ushioda, Tochigi, Japan, assignors to Showa Aluminium Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1972, Ser. No. 227,961
Claims priority, application Japan, Feb. 23, 1971, 46/8,798, 46/8,799, 46/8,800
Int. Cl. B21c 37/00
U.S. Cl. 29—191.6 12 Claims

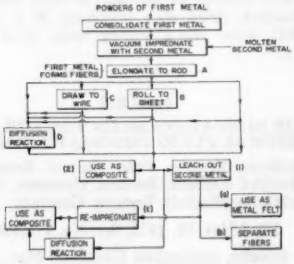


A composite extrusion comprises a base metal member made of pure aluminum or aluminum alloy which assures a beautiful finish when treated by anoidic oxidation and an embedded metal member embedded in the base metal member and made of an aluminum alloy of good machinability. The embedded metal member is positioned in one part generally of the peripheral face of the base metal member to be machined and extends throughout the entire length of the base metal member.

3,827,865
FIBERED METAL POWDERS

Richard W. Douglass, Needham, Mass., assignor to Norton Company, Worcester, Mass.

Application Mar. 13, 1969, Ser. No. 807,129, which is a continuation of application Ser. No. 626,773, Mar. 29, 1967, both now abandoned. Divided and this application July 30, 1970, Ser. No. 59,555
The portion of the term of the patent subsequent to Aug. 1, 1989, has been disclaimed
Int. Cl. B22f 3/26
U.S. Cl. 29—192 1 Claim



Hard metal powder compacts are sintered and impregnated with a softer metal. The compacts are reduced to rod, wire or sheet. In the process fine fibers of the hard metal powder are formed.

3,827,866

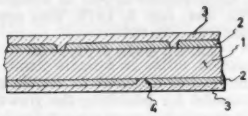
SURFACE TREATED STEEL PLATE

Hiromu Uchida and Osamu Yanabu, Himeji, Japan, assignors to Nippon Steel Corporation

Continuation of abandoned application Ser. No. 625,421, Mar. 23, 1967. This application Jan. 26, 1971, Ser. No. 109,938

Int. Cl. B32b *15/00*

U.S. Cl. 29—195 10 Claims



This invention relates to the surface treatment of steel plates or sheets and discloses a novel steel sheet structure, wherein the steel sheet is first electrolytically surface coated with a metallic chromium layer of a thickness not exceeding about 0.1 micron and is then electrolytically plated with a chromate film of a thickness not exceeding 0.1 mg./dm.^{2}. The chromium layer thickness should preferably not be less than 0.0016 micron. The inventive steel sheet constitutes a superior can stock and may be provided with a top coat of organic composition.

3,827,867

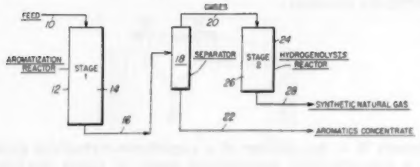
PRODUCTION OF METHANE AND AROMATICS

Heinz Heinemann, Princeton, N.J., and Paul B. Weisz, Lower Makefield Township, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,306

Int. Cl. C10g *11/28*

U.S. Cl. 48—211 10 Claims



A combined aromatization and light gas hydrogenolysis whereby naphtha or light gas hydrocarbons are initially aromatized in contact with a ZSM–5 type of synthetic aluminosilicate zeolite molecular sieve under specified conditions to produce a product at least 30 weight percent of which is a mixture of aromatic hydrocarbons, and the remainder of which is a gaseous mixture of hydrogen and lower molecular weight hydrocarbons. The gaseous mixture is characterized by an atom ratio of about 1 carbon atom to 4 hydrogen atoms. This gas is contacted with a hydrogenolysis catalyst, such as nickel, at a temperature of about 525 to 1000° F. and a pressure of about 0 to 200 p.s.i.g. to convert at least most, and preferably substantially all of the hydrogen and the carbon in the hydrocarbon components to a synthetic natural gas which is thermally and physically compatible with natural gas.

3,827,868

CLEANSER COMPOSITIONS CONTAINING BOTH OXIDIZING AND REDUCING AGENTS

Richard L. Burke, Madison, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 668,669, Sept. 18, 1967. This application Oct. 4, 1971, Ser. No. 186,552

The portion of the term of the patent subsequent to Aug. 28, 1990, has been disclaimed

Int. Cl. C09c *1/68;* C09g *1/02*

U.S. Cl. 51—308 9 Claims

This disclosure relates to solid abrasive cleansing compositions having particular utility as both a tea stain and aluminum pot mark remover from hard surfaces such as porcelain, comprising an oxidant capable of oxidizing the metal in a practical time such as the metallic ions ferric, stannous, cupric and mercuric, a reductant such as sodium hypophosphite cuprous chloride, and an abrasive, said composition having a pH of less than 2. Additives such as detergents, perfumes, fillers, colorants, etc. may be included provided they do not adversely effect the stain removing properties of the composition. Although aluminum pot marks are most often encountered in normal household cleaning, said cleansers are effective against other metallic stains such as iron, tin, magnesium, etc.

3,827,869

PRODUCTION OF FOAMED SILICATE MOLDINGS WHERE THE FOAMABLE COMPOSITION IS GELLED PRIOR TO FOAMING

Wulf von Bonin, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 15, 1973, Ser. No. 332,828

Claims priority, application Germany, Mar. 7, 1972, P 22 10 837.8

Int. Cl. C03b *19/08*

U.S. Cl. 65—22 9 Claims

The present invention relates to a process for the production of foaming moldings having a silicate skeleton which comprises mixing in aqueous solution containing a water soluble silicate, a gelling agent and a foaming agent which liberates a volatile substance above about 70° C., converting said mixture into a gel and then foaming said gel by heating it above 70° C. It is preferred to use as silicate solution a sodium waterglass solution, as gelling agent chloroformic acid esters and as foaming agents petrol, light petrol or petrol ether.

3,827,870

METHOD AND APPARATUS FOR COATING GLASSWARE

Clement V. Fogelberg and John M. Kujava, Arvada, Colo., assignors to Columbine Glass Company, Wheat Ridge, Colo.

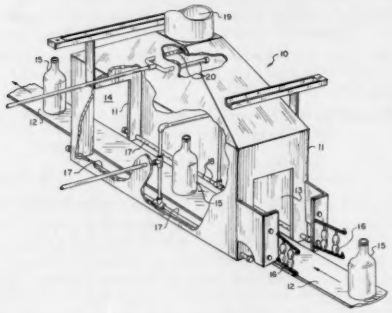
Filed June 25, 1973, Ser. No. 373,325

Int. Cl. C03c *17/10*

U.S. Cl. 65—60 11 Claims

This invention pertains to a method and apparatus for "hot-end" treating and coating of newly formed glassware surfaces by exposing such surfaces to hydrolyzable and pyrolytically degradable metallic halide treatment gases wherein, as the result of the corosive waste products produced by hydrolyzation and degradation of such gases, a flame is utilized to induce flow of such waste products through a duct to a proper disposal area. The improvement in the method and apparatus being, contrary to the

prior art and accepted commercial embodiments, the location of the flame at an area remote from the treatment



portion of such hooded apparatus whereby improved, smoother and more tenacious coating of the glass is produced.

3,827,871

COATING PROCESS FOR GLASS CONTAINERS

Sidney Maurice Budd, Edgware, England, assignor to United Glass Limited, Staines, Middlesex, England

No Drawing. Filed Nov. 23, 1971, Ser. No. 201,308
Int. Cl. C03c *15/00, 17/00*
U.S. Cl. 65—60 **6 Claims**

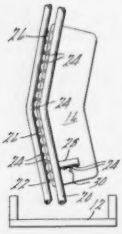
A method of manufacturing glass containers comprises contacting the containers, immediately after forming and whilst they are still hot, with a thermally stable metal-organic compound in liquid form, subjecting the treated containers to a heat treamtent to cause the metal-organic compound to react with the glass and form a diffuse layer of reaction product within the glass surface, and treating the containers while at a temperature of at least 450° C. with a liquid or vapour metal compound which decomposes rapidly to produce a surface file of metal oxide. The metal-organic compound may be a compound of tin, titanium, cobalt, manganese or chromium. The liquid of vapour metal compound may be a compound of tin, titanium, iron, chromium or aluminium. A single reagent may produce both the metal-organic compound and the liquid or vapour metal compound.

3,827,872

GLASS TEMPERING METHOD

Eugene H. Augustin, Dearborn Heights, and William P. Long, Taylor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 18, 1972, Ser. No. 281,881
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **2 Claims**



An improved method of tempering glass is disclosed. The improvement comes in the step of preheating the trailing edge of a glass sheet supported on a glass handling fixture prior to the glass sheet's entry into a glass heating chamber. The other steps of the method are as taught in the glass tempering art. The preheating step reduces the tendency for a heated glass sheet to break when it is rapidly cooled in a quenching station.

3,827,873

SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 464, Jan. 2, 1970. This application July 13, 1972, Ser. No. 271,459
Int. Cl. A01n *9/02, 9/20*
U.S. Cl. 71—67 **12 Claims**

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water and, in particular, water used for industrial purposes; for example, in the manufacture of pulp paper, in the manufacture of paper, in cooling water systems and in effluent water treatment. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slime in aqueous systems or bodies which are objectionable from either an operational or aesthetic point of view. Specifically, the invention is directed to the use of compositions comprising a combination of a bromonitrostyrene and a specific quaternary N-alkyl ammonium chloride detergent having an alkyl distribution of from about 12 to 18.

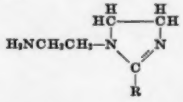
3,827,874

METAL-WORKING FLUIDS CONTAINING MICROBIOCIDAL NAPHTHENYL IMIDAZOLINES

Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 883,641, Dec. 9, 1969, now Patent No. 3,705,027. This application Oct. 18, 1972, Ser. No. 298,758
The portion of the term of the patent subsequent to Dec. 5, 1989, has been disclaimed
Int. Cl. A01n *9/22*
U.S. Cl. 71—67 **2 Claims**

The use of 1-aminoethyl-2-naphthenyl imidazoline, having the structure:



wherein R is the residue of a naphthene-carboxylic acid, as a microbiocidal preservative agent in metal working fluids.

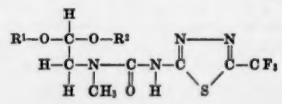
3,827,875

DIALKYL ACETALS OF HETEROCYCLIC UREIDOACETALDEHYDE

John Krentzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Original application Dec. 31, 1971, Ser. No. 207,529, now Patent No. 3,759,940. Divided and this application Apr. 30, 1973, Ser. No. 355,387
Int. Cl. A01n *9/14*
U.S. Cl. 71—90 **2 Claims**

This invention discloses new chemical compounds of the formula

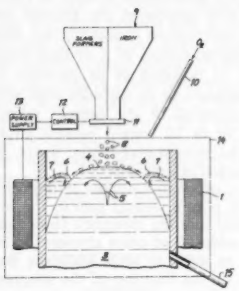


wherein R^1 and R^2 are each alkyl of up to 3 carbon atoms. Further described are herbicidal compositions utilizing the above defined compositions.

3,827,876
LUMP ORE PRODUCTS AND METHODS OF MAKING THE SAME
Louis George Imperato, Jr., Tenafly, N.J., assignor to Blocked Iron Corporation, Montrose, N.Y.
Filed Feb. 10, 1969, Ser. No. 797,825
Int. Cl. C21b *1/24*; C22b *1/24*
U.S. Cl. 75—3 **5 Claims**

A method of forming lump ores is provided which includes the steps of admixing a finely divided metal containing ore with an oxide or hydroxide of an alkaline earth metal, and a small amount of sulfur together with sufficient moisture to permit formation of aggregates such as lumps, pellets or blocks, forming the mix into aggregates, reducing the moisture to below 10%, subjecting the aggregates to carbon dioxide atmosphere to convert a substantial part of the alkaline earth metal oxide or hydroxide to carbonate *in situ*, and recovering the aggregate ore product so formed.

3,827,877
METHOD OF INDUCTION-REFINING A FERROUS MELT USING A SPONGE IRON CHARGE
Heinz-Dieter Pantke, Essen-Frintrop, and Ulrich Pohl, Oberhausen-Osterfeld, Germany, assignors to Huttenwerk Oberhausen AG, Oberhausen, Germany
Continuation-in-part of application Ser. No. 228,406, Feb. 22, 1972, which is a continuation of application Ser. 879,459, Nov. 26, 1969, both now abandoned. This application Oct. 2, 1972, Ser. No. 294,436
Claims priority, application Germany, Nov. 29, 1968, P 18 11 703.8
Int. Cl. C21c *5/52*; H05b *5/12*
U.S. Cl. 75—12 **4 Claims**

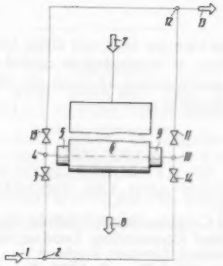


The crucible of an induction furnace is surrounded by an upright coil that is energized by alternating-current electric power. The power input to the coil is of such a level that a raised, slag-free crown is formed on the top of the melt and at least 55% of the slag produced is retained to form an annulus around this crown. The centrally ascending and peripherally descending currents in the ferrous melt cause the crown to form and also induce the annulus to introvert (circulate inwardly and downwardly) so that light sponge iron added to the melt is drawn downwardly into the slag-steel interface and quickly heated and brought into intimate contact with both floating slag and the ferrous melt. The power is fed to the coil in a magnitude determined by the relationship

$$P > K\sqrt{f}$$

wherein P is the power input in kilowatts per ton of the melt, K is the annulus-forming constant and is greater than 45 and preferably more than 49.5, and f is the frequency in Hz. of the alternating current.

3,827,878
METHODS AND APPARATUS FOR THE REDUCTION OF METAL ORES, PARTICULARLY IRON ORES
Werner Wenzel, Mohammed Meraikib, and Friedrich H. Franke, Aachen, and Horst Konig, Duisburg, Germany, assignors to Demag A.G., Duisburg, Rheinische Braunkohlenwerke A.G., Cologne, and Dr.-Ing. Wenzel, Aachen, Germany, fractional part interest to each
Filed June 23, 1972, Ser. No. 265,527
Claims priority, application Germany, June 26, 1971, P 21 31 876.3
Int. Cl. C21b *13/02*
U.S. Cl. 75—34 **10 Claims**

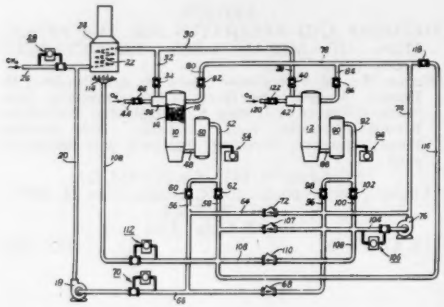


Methods and apparatus are provided for reducing metal ores in which the ore is exposed to reducing gases in evenly diffused fashion over the entire cross section of the charge. The above is achieved by the periodic reversal of the flow direction of the reducing gas diffused transversely of the charge direction, by reintroducing already diffused gases back into the charge at points upstream of the charge flow, and by removing the diffused gases at a point upstream of the charge flow from the point at which the gases entered, the latter providing simultaneously a counter-current and transverse flow pattern of reducing gases through the charge. Also provided herewith are means for utilizing spent reducing gases for preheating and pre-drying the charge prior to reduction.

3,827,879
METHOD FOR THE GASEOUS REDUCTION OF METAL ORES
Juan Celada, Monterrey, Jesus Maria Pena, San Nicolas de los Garza, Nuevo Leon, and Patrick W. MacKay, Ramon de la Pena, Enrique Ramon Martinez, and Maria Teresa de la Torre, Monterrey, Nuevo Leon, Mexico, assignors to Fierro Esponja, S.A., Monterrey, Nuevo Leon, Mexico
Filed Feb. 22, 1973, Ser. No. 334,670
Int. Cl. C21b *13/02*
U.S. Cl. 75—35 **19 Claims**

A method for the gaseous reduction of iron ore to sponge iron in a multi-stage reactor system comprising a reduced and a cooling reactor containing a fixed bed of reduced and a cooling reactor containing a fixed bed of reduced ore to be cooled, wherein separate circuits are established for recycling gas through each reactor, natural gas or methane is fed to one of said circuits and partially oxidized to form a reducing gas mixture consisting essentially of 14 to 40% carbon monoxide, 4 to 40% carbon

dioxide, 14 to 50% hydrogen and 10 to 60% methane, reducing gas is continuously transferred from one of said circuits to the other and continuously removed from the other of said circuits. A reduction plant having a high



yield of sponge iron per hour per cubic foot of reduction space is achieved, at relatively low capital outlay and the plant can be easily scaled up from say 20 tons per day to 1,200 tons per day.

3,827,880

INCLUSION OF HYDROBORACITE IN ADDITIVE COMPOSITION AND USE THEREOF IN STEEL REFINING

Henry Edward Greeson, South Nutfield, England, assignor to British Steel Corporation, London, and Borax Consolidated Limited, London, England

No Drawing. Filed Dec. 7, 1972, Ser. No. 312,835
Claims priority, application Great Britain, Dec. 7, 1971, 56,883/71
Int. Cl. C21b *3/04*; C21c *7/00*; C22b *9/10*
U.S. Cl. 75—53 **6 Claims**

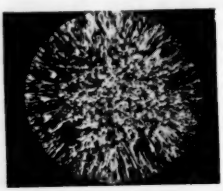
Certain boron-containing compounds have been proposed for use as additives in basic oxygen steelmaking to accelerate the dissolution rate of lime in the slag. It has been found that the complex boron compound hydroboracite, available as an ore, shows surprisingly improved properties over the boron ores previously proposed. Hydroboracite may be used either to increase lime dissolution rate or to promote slag fluidity, may be used in basic oxygen steelmaking or electric arc steelmaking, and may be added in admixture with fluorspar and/or lime.

3,827,881

GRAIN REFINEMENT OF ALUMINUM ALLOY CASTINGS

Enrique C. Chia, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Feb. 24, 1972, Ser. No. 228,824
Int. Cl. C22c *1/06*
U.S. Cl. 75—138 **7 Claims**



This invention relates to a method of producing a finer and more equiaxed cast grain structure in aluminum alloys by the addition of the desired alloying element in its partially or fully oxidized state. Aluminum base alloys and aluminum alloy electrical conductors produced by this method are also disclosed.

3,827,882

HIGH LEAD ALUMINIUM ALLOY

Kenneth Lloyd, Chesham and Anthony Dennis Michael, London, England, assignors to The Glacier Metal Company Limited.

No Drawing. Continuation of application Ser. No. 807,425, Mar. 14, 1969. This application Sept. 24, 1971, Ser. No. 183,705
Claims priority, application Great Britain Mar. 15, 1968, 12,785/68
Int. Cl C22c *21/00*
U.S. Cl. 75—138 **3 Claims**

This invention is a bearing alloy for acting as a lining on a steel backing. Good bearing properties are given by having a high percentage, preferably between 10% and 12% by weight, of lead in aluminium. Strength can be given by some silicon and some calcium improves the solubility of the lead in the aluminium and up to 1% of lithium may be added to globularize the lead in the aluminum.

3,827,883

ELECTRICAL CONTACT MATERIAL

Lloyd F. Neely, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis Ind.

No Drawing. Filed Oct. 24, 1972, Ser. No. 299,697
Int. Cl. C22c *5/00, 27/00*
U.S. Cl. 75—153 **14 Claims**

An electrical contact material consisting essentially of tungsten or its carbides, a metal of high electrical conductivity such as silver or copper, and magnesium oxide. Tungsten or its carbides are used to provide the contact material with a high melting temperature constituent. The silver or copper is used to provide the contact material with a constituent of high electrical conductivity. The magnesium oxide constituent is used to provide the contact material with improved arc erosion resistance and improved arc interruption characteristics when compared to the same characteristics of a contact material consisting essentially of tungsten or its carbides, and silver or copper. The tungsten or its carbides with silver or copper type contact material of the present invention consists essentially of 90 to 10 weight percent silver or copper, 0.25 to 7 weight percent magnesium oxide, the remainder essentially tungsten or carbides.

The presence of small amounts of impurity elements is not believed to play a critical role in the invention. It is to be understood that the invention contemplates the possibility of the addition of other elements to electrical contact material as long as such additives do not have a harmful effect on the function of the magnesium oxide in the contact material.

3,827,884

TIN BASED WHITE METAL BEARING ALLOYS PRODUCING GOOD BOND WITH BACKING MATERIAL

Nobukazu Morisaki, Nagoya, Japan, assignor to Daido Metal Company, Nagoya, Japan

Continuation-in-part of abandoned application Ser. No. 78,546, Oct. 6, 1970. This application Nov. 6, 1972, Ser. No. 303,837
The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed
Claims priority, application Japan, July 15, 1970, 45/61,420
Int. Cl. C22c *13/00*
U.S. Cl. 75—175 A **1 Claim**

A tin based white metal bearing alloy having a high elongation and capable of producing a good bond with

a backing material, which is composed of 1.0–2.9% by weight of copper, 5.0–13.0% by weight of antimony, 0.1–1.5% by weight of cadmium, 0.001–0.1% by weight of beryllium, 0.005–0.2% by weight of chromium and the remainder consisting of tin.

3,827,885

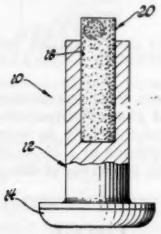
METHOD OF MAKING TIRE STUD

Charles S. Baum, St. Clair Shores, Mich., assignor to Textron Inc., Providence, R.I.

Original application May 15, 1970, Ser. No. 37,708. Divided and this application May 17, 1973, Ser. No. 361,360

Int. Cl. B22f 5/00

U.S. Cl. 75—208 R 8 Claims



A tire stud and the method of making same. The tire stud includes an elongated metal body having a head at one end and a shank extending from the head with a cavity extending into the shank toward the head. In making the completed stud, the body is disposed in a bore having a shank receiving portion and a smaller portion which is generally of the same cross sectional area as the cavity and which extends upwardly from the cavity to an opening. Material is disposed through the opening to fill the cavity and at least a part of the smaller portion of the bore above the cavity. These materials include particles made of carbon grains sintered together by a binder such as cobalt and an additional filler metal powder. The filler metal powder is melted so as to fill the spaces between the particles and thereafter solidifies to form a composite of the particles bonded together by the filler material.

3,827,886

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS

Masao Ishihra, Teruhide Haga, Hiroshi Horiuchi, Hisashi Yamaguchi and Osakazu Sugino, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 52,760, July 6, 1970. This application July 3, 1972, Ser. No. 268,754

Claims priority, application Japan, July 9, 1969, 44/53,767

Int. Cl. G03c 1/06, 1/34, 5/26

U.S. Cl. 96—50 R 3 Claims

A method of preventing fog during rapid development of a light-sensitive silver halide emulsion at elevated temperatures by developing said emulsion in the presence of 4-hydroxy-6-methyl-1,3,3a,7-tetrazaindene and at least one of a particular group of quaternary ammonium compounds.

3,827,887

STORAGE STABILITY OF NONSILVER PHOTOSENSITIVE SYSTEMS BY INCORPORATING THEREIN CERTAIN ORGANIC N-OXIDES

Andrew C. Hazy, Mentor, John E. Shirey, Bedford Heights, and Lothar Ramins, Cleveland, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

No Drawing. Filed Oct. 10, 1972, Ser. No. 295,834

Int. Cl. G03c 1/52, 5/24

U.S. Cl. 96—480 P 14 Claims

Storage stability, especially resistance to atmospheric moisture of non-silver photosensitive compositions such as those described in U.S. 3,481,739 and similar non-silver free radical compositions, is improved by the addition thereto of certain organic nitrogen compounds containing an N→O group.

3,827,888

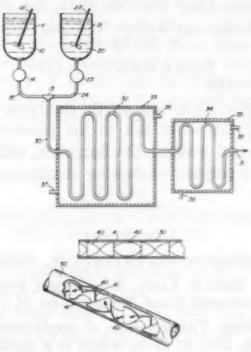
APPARATUS AND PROCESS FOR COMBINING CHEMICALLY COMPATIBLE SOLUTIONS

James P. Terwilliger, Anthony D. Gingello and John R. Tinney, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1972, Ser. No. 231,841

Int. Cl. B01f 7/08; G03c 1/02, 1/28

U.S. Cl. 96—107 4 Claims



An apparatus and process are disclosed in which an emulsion and an addenda sensitizer solution are directed as separate flows to a common junction where the flows are intermixed into a common flow upon coming into contact. The common flow of emulsion and addenda sensitizer solution is then moved through an extended path which includes means for heating the emulsion to a predetermined temperature and maintaining it at said temperature for a predetermined period of time and means for cooling the common flow very rapidly, thereby finishing the emulsion and providing an emulsion of uniform sensitization. While the emulsion is being moved through the conduit which forms and defines the extended path, it is being mixed continuously by a continuous series of

elements arranged within and throughout the full length of the conduit from the common junction to an outlet located beyond the cooling means.

3,827,889

THERMALLY DEVELOPABLE LIGHT SENSITIVE MATERIAL

Kinji Ohkubo, Takao Masuda, and Junpei Noguchi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Continuation of abandoned application Ser. No. 643,828, June 6, 1967. This application Oct. 8, 1971, Ser. No. 187,844

Claims priority, application Japan, June 6, 1966, 41/36,387

Int. Cl. G03c *1/02*

U.S. Cl. 96—114.1 **4 Claims**

In a thermally developable light-sensitive paper composed of a silver salt of benzotriazole, a light-sensitive silver halide, a reducing agent, such as, hydroquinone and an organic acid, such as, an aliphatic monocarboxylic acid, the preservability of images can be improved by using l-ascrobic acid, its esters, furoin, benzoin, dihydroxy acetone, etc., as a reducing agent. According to the paper used, a negative and a positive copy can be obtained from the same material.

3,827,890

PROCESS FOR THE PREPARATION OF PHOTOGRAPHIC SILVER SALT EMULSIONS

Wilhelm Saleck, Schildgen, Gerhard Balle, Cologne, and Wolfgang Himmelmann, Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 21, 1972, Ser. No. 308,565

Claims priority, application Germany, Nov. 24, 1971, P 21 58 196.4

Int. Cl. G03c *1/72, 1/04*

U.S. Cl. 96—114 **5 Claims**

Photographic silver salt gelatin emulsions are made by precipitating the silver salt in the presence of gelatin, flocculation and washing the flocculate, with an aqueous solution of a polymer containing disulfonimide groups.

3,827,891

HIGH ADHESION METALLIZING COMPOSITIONS

John R. Larry, Wilmington, Del. (396 Dansworth Road, Youngstown, N.Y. 14174)

No Drawing. Continuation of application Ser. No. 186,383, Oct. 4, 1971, which is a continuation-in-part of application Ser. No. 146,799, May 25, 1971, which in turn is a continuation-in-part of application Ser. No. 99,318, Dec. 17, 1970, all now abandoned. This application June 11, 1973, Ser. No. 369,116

Int. Cl. C09d *5/24*

U.S. Cl. 106—1 **10 Claims**

Metallizing compositions comprising noble metal(s) and, in particular, inorganic binder which contains a glass composed of 30–50% PbO, 30–40% SiO_2, 2–8% Al_2O_3, 2–8% B_2O_3, 2–15% CaO, 0.5–5% TiO_2 and ZrO_2. These compositions are applied to a dielectric substrate and used in the electronic industry to form highly dense films which exhibit good solderability, good solder leach resistance, good initial adhesion and good thermal aged adhesion.

3,827,892

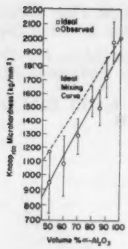
MICA BASED, CERAMIC COMPOSITE MATERIAL

James W. McCauley, Wakefield, Mass., assignor to the United States of America as represented by the Secretary of the Army

Filed May 7, 1973, Ser. No. 357,571

Int. Cl. B32b *5/16*; C04b *33/26*; F16k *31/12*

U.S. Cl. 106—46 **2 Claims**



The use of synthetic, fluorine containing micas, by hot-pressing as a second phase incorporation into a ceramic body in an amount of 5 to 50% by volume to produce a novel particulate dispersion or a dispersed micro-laminate thereby enhancing the properties of the ceramic materials.

3,827,893

SILICATE BODIES

Helmuth E. Meissner, Painted Post, and Stanley D. Stookey, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 45,907, June 12, 1970. This application Feb. 22, 1972, Ser. No. 228,299

Int. Cl. C04b *35/16*

U.S. Cl. 106—74 **15 Claims**

This invention relates to the discovery that when certain esters or inorganic salts which hydrolyze to weak acids are added to true solutions, colloidal solutions, and suspensions of soluble silicates containing more than 1 mole of silica per liter and having a pH greater than about 10, a reaction will take place wherein the pH will be reduced and the silica will polymerize into a network structure. The reacted body may then be fired below the softening point of the polymerized product to form a glass article having a geometry similar to that of the original body or may be treated so as to form a self-supporting, monolithic porous body which, if desired, can be consolidated by heat to a glassy body.

3,827,894

CEMENTITIOUS COATING CONTAINING NON-ABRASIVE FILLER

Howard C. Hansen, 926 E. Hermosa Drive, Tempe, Ariz. 85281

No Drawing. Filed Dec. 13, 1972, Ser. No. 314,863

Int. Cl. C04b *7/08*

U.S. Cl 106—90 **11 Claims**

A protective coating for concrete, slate and gravel covered roof structures prepared from a preferred mixture comprising: white cement, white waterproof cement, non-abrasive fillers, a whitening agent, a setting agent, a binder, and water.

3,827,895

MOD-WALL CONCRETE

William Leo Copeland, 3405 Marks St., Shreveport, La. 71103

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,659

Int. Cl. C04b 7/04

U.S. Cl. 106—99 6 Claims

A concrete composition developed to provide a material of construction which can be utilized to build essentially all types of structures, including houses, office buildings, and the like, which is capable of being wet mixed and subsequently molded into convenient and useful shapes. The composition has great strength, excellent shrink resistance properties, is shock resistant, and provides good insulation for structures, and is adapted for use with suitable molds to form the entire wall, slab and roof structure of a house or other building in a single pouring.

3,827,896

METHOD OF PRODUCING CLINKER OF ALUMINA CEMENT

Vyacheslav Ivanovich Avdjukov, pereulok Druzhby, 13a, kv. 48, and Boris Nikolaevich Lebedev, ulitsa Furmanova 51, kv. 23, both of Alma-Ata, U.S.S.R.

No Drawing. Filed Nov. 1, 1972, Ser. No. 302,819

Int. Cl. C04b 7/32

U.S. Cl. 106—104 3 Claims

The method comprises the preparation of an aluminocalcium batch suitable for use in making alumina cement by firing aluminosilicate starting material with calcium chloride, with subsequent treatment of the resulting sintered product with sulphuric acid and precipitation of said aluminocalcium mixture from said solution with calcium-containing inorganic substances.

3,827,897

PROCESS OF OBTAINING A DRY AND POWDERY MIXTURE OF HYDRATED LIME AND PLASTER

Philippe Dumont, Stockay, Belgium, assignor to Carriere et Fours a Chaux Dumont-Wautier, La Mailleue, Belgium

Filed May 31, 1972, Ser. No. 258,287

Claims priority, application Great Britain, June 9, 1971, 19,725/71

Int. Cl. C04b 11/06

U.S. Cl. 106—110 3 Claims

For obtaining a building material containing hydrated lime and plaster, quicklime is reacted with synthetic gypsum, such as phosphogypsum which is a byproduct of the manufacture of phosphoric acid, the reaction taking place without external heating in a reaction zone in which a water saturated atmosphere is maintained.

3,827,898

METHOD OF REDUCING THE RATE OF OXIDATIVE DEGRADATION OF CELLULOSE ETHER

Thomas J. Podlas, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Apr. 6, 1973, Ser. No. 348,837

Int. Cl. C08b 21/26, 27/64

U.S. Cl. 106—194 11 Claims

The rate of degradation of non-ionic cellulose ethers under the influence of a persulfate oxidizing agent is reduced and regulated by the addition of small amounts of a divalent manganese compound into a solution of the ether and the oxidizer.

3,827,899

MODIFIED MICROCRYSTALLINE CELLULOSE DISPERSION

Amnon Dov Zirlin, Haifa, Israel, assignor to Centre for Industrial Research (CIR) Ltd., Haifa, Israel

No Drawing. Filed July 27, 1972, Ser. No. 275,776

Claims priority, application Israel, Sept. 28, 1971, 37,810/71

Int. Cl. C08b 25/00, 27/18

U.S. Cl. 106—208 4 Claims

A modified microcrystalline cellulose is obtained by the interaction of microcrystalline cellulose with guargum in an aqueous medium. This modified microcrystalline cellulose functions simultaneously as a body enhancer, cloudifier and suspending agent in acidic soft drinks and prevents the settling of the pulp particles present in the soft drinks and/or the formation of the "ring" in the upper layer of the drinks.

3,827,900

ANTISTAT AND BINDER FOR GLASS FIBERS

A. Carey Williams, P.O. Box 16347, Bel Air Station, Mobile, Ala. 36616

No Drawing. Filed July 31, 1972, Ser. No. 276,314

Int. Cl. C09k 3/16

U.S. Cl. 106—287 S 11 Claims

A process for reducing the static charge and binding glass fibers is disclosed, wherein the glass fibers are contacted with a composition comprising an alkylene polyol, such as an alkylene glycol, a lower alkanol, a polybasic acid, and a siliconate compound. The composition is applied to siliceous fibres, especially glass fibers, in either loose or blanket form, to reduce the static charge thereon and to function as a binder for the fibers. Glass fibers treated by the composition of the present invention are useful in various applications such as for blown insulation.

3,827,901

CALCIUM-ALUMINUM-SILICATE EXTENDER PIGMENT

Thomas S. Griffin, Webster Groves, and Kenneth W. Heywood, Overland, Mo., assignors to N L Industries, Inc., New York, N.Y.

No Drawing. Filed July 24, 1972, Ser. No. 274,271

Int. Cl. C09c 1/02, 1/28, 1/40

U.S. Cl. 106—306 1 Claim

This invention relates to a new composition of matter which is useful as a pigment composition for the paper industry. The composition is water insoluble and comprises an intimate mixture of titanium dioxide and a calcium-aluminum-silicate composition in which the amount of titanium dioxide employed is from 0.6 to 4 parts for each part of the calcium-aluminum-silicate composition. The calcium-aluminum-silicate composition is water insoluble and contains the constituents in the amounts indicated (all amounts are expressed by weight):

Constituents:	Parts by weight
CaO	1
Al_2O_3	0.8–1.2
SiO_2	12–16
H_2O	2–4

3,827,902
PROCESS FOR PREPARING PIGMENT COMPOSITIONS

Siegfried Schwerin, Hofheim, Taunus, Reinhold Deubel, Altenhain, Taunus, and Thilo Thilenius, Sulzbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 1, 1972, Ser. No. 249,205
Claims priority, application Germany, May 3, 1971, P 21 21 673.9
Int. Cl. C09b 67/00
U.S. Cl. 106—308 N 9 Claims

An aqueous suspension of a pigment is heated with an aralkyl alkylene amine of the formula

$$R—(CH_2)_n—NH—[(CH_2)_x—NH]_yH$$

or a salt thereof, wherein R represents a substituted or unsubstituted phenyl, n is an integer from 1 to 10, x is an integer from 2 to 10 and y is an integer from 1 to 5. The resulting pigment compositions are particularly suitable for preparing printing inks which have the advantage of being non-blotting when printed on thin and inferior paper. The pigment compositions also have excellent rheological properties and tinctorial strength.

3,827,903
METHOD OF FORMING A DIFFUSED METAL CODED STEEL PRODUCT

Robert M. Hudson, Churchill Borough, Allegheny County, Paul E. Perry, Tarentum Borough, Allegheny County, and Clair J. Warning, Plum Borough, Allegheny County, Pa., assignors to United States Steel Corporation

No Drawing. Filed June 1, 1971, Ser. No. 149,064
Int. Cl. C23c 3/04
U.S. Cl. 117—1 4 Claims

A coded product consisting of a steel substrate, an identification metal diffused onto the surface of the substrate, and in some cases a protective overlay.

3,827,904
THERMAL STABILIZATION OF POLYBENZIMIDAZOLE FIBER FABRICS

John Skelton, Sharon, Mass., and W. Denney Freeston, Jr., Doraville, Ga., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Feb. 28, 1973, Ser. No. 336,584
Int. Cl. B29d 7/22
U.S. Cl. 117—7 1 Claim

A process for producing a thermally stable polybenzimidazole fiber fabric by treating the scoured clean relaxed fabric with a silicone emulsion and then holding the fabric at fixed length and with dimensions while exposing it to a temperature of about 950° F.

3,827,905
DEVELOPMENT ENHANCEMENT OF ELECTROSTATIC IMAGES

Walter Roth, La Jolla, Calif., assignor to Diagnostic Instruments, Inc.

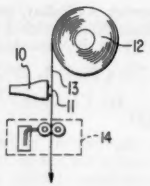
Filed July 9, 1971, Ser. No. 161,227
Int. Cl. C03g 13/08, 13/22
U.S. Cl. 117—17.5 17 Claims

A process of enhancing the development of latent electrostatic images on a substrate which comprises contacting the latent image with a powdered pigmented, fusible and polarizable developer material having an induced electrostatic charge such that it will be attracted to the surface of the substrate. After the powder particles are preferably fixed or fused on the substrate, it is heated to a temperature in excess of the glass transition temperature of the fused powder particles thereon and subjected to an induced electric field to polarize the particles into electrets. The electrets are then contacted by additional electrostatically charged powder particles in the same manner as was the original latent electrostatic image so that the developed image density is enhanced due to the additional powder particles attracted to the substrate.

3,827,906
METHOD FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE

Masamichi Sato and Yasuo Tamai, Asaki, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 17, 1972, Ser. No. 235,480
Claims priority, application Japan, Mar. 17, 1971, 46/14,843
Int. Cl. G03g 13/10
U.S. Cl. 117—37 LE 5 Claims



A method for developing an electrostatic latent image on a photoconductive surface comprising applying a liquid developer material using a porous material to said electrostatic latent image on said photoconductive surface, the improvement comprising applying said liquid developer material to said photoconductive surface using said porous material by keeping at least a portion of said porous material in contact with a reservoir of said liquid developer material and contacting said photoconductive surface containing said electrostatic latent image thereon with another portion of said porous material and the improvement further comprising said liquid developer being a suspension of a graft pigment in an insulating liquid is disclosed.

3,827,907
PRODUCTION OF TEXTILE MATERIALS WITH IMPROVED FLAME RETARDANCE

Robert Bruce LeBlanc, Wickford, R.I., assignor to Cotton, Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 220,453, Jan. 24, 1972. This application Nov. 20, 1972, Ser. No. 307,796
Int. Cl. B44d 1/44
U.S. Cl. 117—62.1 16 Claims

The flame retardant properties of textile materials which have been reacted with phosphorus-containing compounds or salts thereof, are improved by an after-treatment of the textile material with a salt of a heavy metal, for example, titanium tetrachloride. The treatment not only imparts increased flame retardance to treated textile materials but protects the imparted flame retardance against subsequent impairment by ion exchange with calcium and other elements in water. Consequently, the treatment extends the effective life of flame retardance over a large number of launderings. The treatment is applicable to cellulosic fibers, e.g., cotton or rayon, as well as to wool, silk and other natural and man-made fibers.

3,827,908
METHOD FOR IMPROVING PHOTORESIST ADHERENCE

Claude Johnson, Jr., Yorktown Heights, and Myron D. Palmer, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

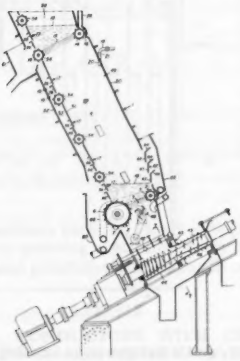
No Drawing. Filed Dec. 11, 1972, Ser. No. 314,050
Int. Cl. B44c *1/18*; B44d *1/52*
U.S. Cl. 117—201 7 Claims

A process for improving the adhesion of a photoresist material to the oxide surface of a semiconductor substrate is disclosed. The method comprises adding 1-hydroxyethyl, 2-alkylimidazolines to phenol formaldehyde resins having diazo-ketone sensitizers.

3,827,909
APPARATUS FOR EXTRACTING JUICE FROM SUGAR CANE

John Farmer, Honolulu, Hawaii, assignor to Ward Foods, Inc., New York, N.Y.

Filed June 23, 1971, Ser. No. 155,725
Int. Cl. C13d *1/02*
U.S. Cl. 127—3 32 Claims



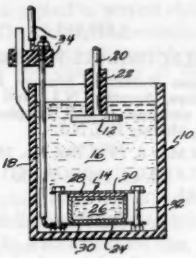
Apparatus for extracting juice from sugar cane has one or more downwardly discharging hoppers through which disintegrated cane or bagasse moves by gravity as a column. The bagasse column is subjected within the hopper to diluent liquid for extracting juice by rinsing and displacement, and roll means acting externally on the column control the rate of discharge of the bagasse, while restraining discharge of liquid therewith, and usually will feed the bagasse to a process for extracting additional juice and reducing its liquid content prior to further processing. A screening device at the inlet end of the hopper receives bagasse in the form of a slurry from an associated mixing tank and drains off both slurry liquid and mud and sand before the bagasse is introduced as a solid into the hopper.

3,827,910
HOMOGENEOUS CATHODE MIXTURES FOR SECONDARY ELECTROCHEMICAL POWER-PRODUCING CELLS

Elton J. Cairns, Lisle, Hiroshi Shimotake, Hinsdale, and Jan R. Selman, Wheaton, Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 30, 1972, Ser. No. 311,048
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 LF 15 Claims

This invention consists of a secondary, electrochemical power-producing cell having an anode containing a molten alkali metal of low electronegativity, an electrolyte containing alkali-metal ions, and a novel cathode containing a reactant comprising a chalcogen wherein the cathode comprises a substantially homogeneous mixture of the reactant, a porous substrate material impregnable by the reactant, electrolyte, and an electronically-conducting material.



3,827,911
PREPARATION OF NICKEL ELECTRODES

David F. Pickett, Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

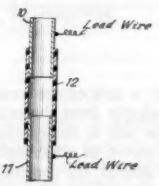
No Drawing. Filed Feb. 21, 1973, Ser. No. 334,503
Int. Cl. H01m *43/04*
U.S. Cl. 136—24 6 Claims

A method of preparing nickel electrodes is provided in which a porous nickel plaque, positioned between two nickel sheets, is immersed in an alcoholic solution of nickel nitrate or a mixture of nickel nitrate and cobalt nitrate. After connecting the plaque to the negative pole and the sheets to the positive pole of a power source, a direct current is passed through the solution for a time sufficient to convert the nitrate, which has impregnated pores of the plaque, to the corresponding hydroxide. A nickel electrode so prepared is particularly useful as the positive electrode in nickel-cadmium batteries.

3,827,912
MAGNETOPOLYPILE TUBULAR BATTERY AND METHOD OF MAKING SAME

Donald S. Justice, 1816 N. Queens Lane, Arlington, Va. 22201

Filed Mar. 30, 1971, Ser. No. 129,347
Int. Cl. H01m *1/00*
U.S. Cl. 136—83 R 12 Claims



A three-sixteenths inch inside diameter tube of one-half inch length suitable as an anode and a tubular cathode of the same dimension are joined by tubular insulation to form an electric cell. These cells are similarly joined to form a battery. The battery may be electrically connected to increase its voltage and amperage so that a 3 foot battery would be very slim and a 8 inch diameter cylinder

would house well over 100 such batteries. In this method and at light weight a quick and conservative experimental instrument is at hand for eventual use as a power pack in an electric car.

3,827,913

SOLID ELECTROLYTE POWER SOURCE

Alexander Duane Butherus, Murray Hill, and James Charles Phillips, Summit, N.J., and Bruno Scrosati, Rome, Italy, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 8, 1972, Ser. No. 250,930

Int. Cl. H01m *11/00*

U.S. Cl. 136—83 R **8 Claims**

A solid electrolyte battery is disclosed, in which the electrolyte is a member of the class of materials represented by the compositional formula $A_xMg_{(6-x)}E_6$ where A is Ca, Ba or Sr, E is S or Se and x ranges from 0.8 to 1.2. In these electrolytes the transported ion is magnesium. The preferred material of the class is $Ba_xMg_{(6-x)}Se_6$. Cells containing this material together with a metallic magnesium negative electrode and an iodine containing positive electrode exhibit an open circuit voltage of approximately 1.7 volts.

3,827,914

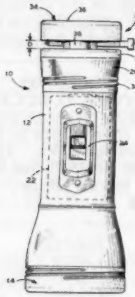
ACTIVATOR FOR A RESERVE ELECTRIC CELL, AS IN A FLASHLIGHT

Gordon E. Kaye, Garrison, N.Y., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 5, 1973, Ser. No. 338,001

Int. Cl. H01m *1/00, 21/00*

U.S. Cl. 136—113 **8 Claims**



An activator for a cell of the reserve type is made separable and detachable from the cell or the utilization device in which the cell is incorporated, which for the present purpose is shown as a flashlight. The mechanism may be reused, as desired, for controlling subsequent reserve cells after the immediate cell has served its purpose. The activator is provided with a detent pin to prevent undesirable operation of the activator by casual external forces, and thus provides a reserve cell with restraining protection to prevent undesired activation of the cell until such activation is desired, and then the detent can be easily manually released and the activator can be manually operated, either by direct hand pressure or by reaction pressure against a stationary surface.

3,827,915

IN A BATTERY, A HALOGEN RETENTION VENT MEANS

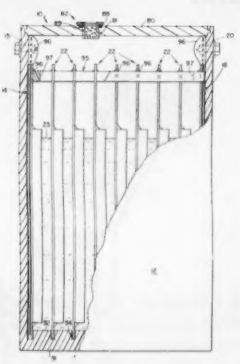
Ralph Zito, Jr., Westford, Mass., assignor to The Zito Company, Inc., Derry, N.H.

Original application Feb. 3, 1971, Ser. No. 112,254, now Patent No. 3,719,526. Divided and this application Oct. 30, 1972, Ser. No. 302,260

Int. Cl. H01m *1/06*

U.S. Cl. 136—179 **2 Claims**

Electrode structures for a rechargeable metal halide battery include: a cathodic electrode comprising a halogen-inert electroconductive layer and bonded to one of the major surfaces thereof, a halogen-entrapment structure comprising a halogen-adsorbent layer and a surface layer comprising porous, electrically non-conductive halogen-inert, electrolyte-inert, and halogen non-adsorbent particles, having an average largest dimension less than about 10 mils and a halogen-inert bonding agent bonding the particles together into an integral non-conductive mass which essentially retains the porosity of the particles; and an anodic electrode having a coating of such electrically nonconductive particles on the electroplating surface of the electrode.



3,827,916

LOW TEMPERATURE MERCURY OXIDE-ZINC BATTERY

Franklin G. Fagan, Jr., Ossining, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Sept 1, 1972, Ser. No. 285,763

Int. Cl. H01m *21/06*

U.S. Cl. 136—20 **8 Claims**

A mercury oxide-zinc cell with a single or double anode structure between two concentric annular depolarizer cylinders, with interposed separator and absorbent layers as pre-wound tubes, essentially as two cell-pairs, back to back, to provide maximum exposed electrode surface areas of the depolarizer cylinders relative to the anode; with the anode or anodes being relatively thin and having about 65% porosity, and the cathode depolarizer cylinders being relatively thick of maximum attainable density; with an electrolyte having a composition of about seven molar KOH with about 2% Zinc Oxide; and with an absorbent consisting of a non-woven mat of polyamide (nylon) fibers; with the two cell-pairs having equal energy capacities so both will be exhausted in equal time periods.

3,827,917

ALUMINUM ELECTRICAL CONDUCTOR AND PROCESS FOR MAKING THE SAME

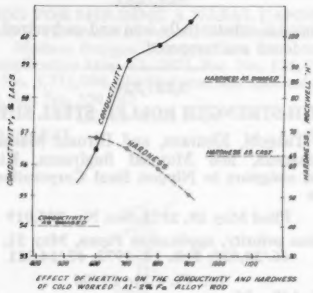
Paul P. Zeigler, Oakland, and Sidney G. Roberts, Livermore, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of abandoned application Ser. No. 834,333, June 18, 1969. This application May 12, 1971, Ser. No. 142,505

Int. Cl. C22f *1/04*

U.S. Cl. 148—2 **13 Claims**

This disclosure relates to alloys of aluminum suitable for use as electrical conductors. The alloys contain from in excess of 1% to about 3% by weight iron and are treated so that the particle size and distribution of the intermediate phases containing iron are controlled whereby



EFFECT OF HEATING ON THE CONDUCTIVITY AND HARDNESS OF COLD WORKED Al-2% Fe ALLOY ROD

these iron constituent particles impart strength, ductility and resistance to softening at elevated temperatures to the aluminum without prohibitively degrading its conductivity.

3,827,918

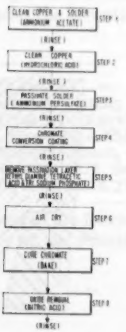
ELECTRICAL CONDUCTORS WITH CHROMATE SOLDER BARRIER AND METHOD OF FORMING

Thomas J. Ameen, Endicott, and Nimrod N. Mesley, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1972, Ser. No. 256,735

Int. Cl. B44d *1/18*; C23f *7/26*

U.S. Cl. 117—6.2 **17 Claims**



Printed circuit conductors are selectively coated with a chromate conversion film to confine molten solder to selected areas during reflow and thereby prevent wicking. Methods of application allow immersion coating of the chromate, either with or without solidified solder present in the selected areas. With solder present, a passivation layer is formed on the solder to prevent chromate deposition, and without the presence of solder a removable protective resist is applied to prevent chromating on the selected areas. The chromate conversion coating withstands successive flux applications and reheating for repetitive assembly and disassembly of the solder joints without allowing solder runback.

3,827,919

BERYLLIUM SURFACE TREATMENT

Robert F. Keating, Syosset, N.Y., assignor to Sun Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,025

Int. Cl. C23f *11/00*

U.S. Cl 148—6.16 **14 Claims**

Beryllium surfaces are treated in a two step process to remove corrosion products and prevent future corrosion. The process comprises a corrosion removal treatment which utilizes an oxalic acid solution containing a surfactant such as a linear alkyl aryl sulfonic acid and a passivation treatment which utilizes a solution containing phosphoric acid, hexavalent chromium ions and a surfactant such as a linear alkyl aryl sulfonic acid. The presence of the surfactant in both solutions reduces the surface tension so that the solutions penetrate the porous structure of the beryllium surface resulting in effective corrosion removal and prevention of future corrosion.

3,827,920

METHOD FOR FORMING A WEAR-RESISTANT SURFACE ON A METAL ARTICLE

Yasunori Shimoda, Tachikawa, and Kojiro Taniguchi, Iruma, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 8, 1972, Ser. No. 278,758

Claims priority, application Japan, Aug. 9, 1971, 46/60,440

Int. Cl. C23c *7/00, 9/00, 11/14*

U.S. Cl. 148—15.5 **5 Claims**

A method is disclosed by which a metal workpiece is coated with a wear-resistant layer which is metallically bonded to the surface of the base metal and which is superior in abrasion-resistant ability to the coatings which are formed by prior art methods, wherein the method comprises applying a coating of a self-fluxing alloy on the surface of the base metal and subjecting the coating to nitriding treatment or to nitriding and carburizing treatment.

3,827,921

METHOD OF MAKING A COMPOSITE ALLOY

Oleg D. Sherby, Palo Alto, Irvin C. Huseby, Sunnyvale, and Robert Whalen, East Palo Alto, Calif., assignors to the United States of America as represented by the Secretary of the Navy

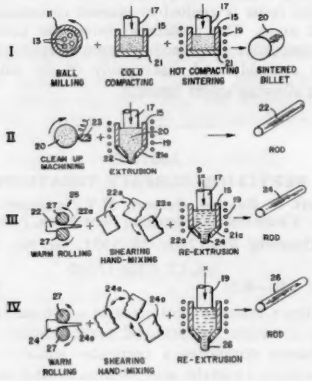
Continuation of abandoned application Ser. No. 230,396, Feb. 29, 1972. This application Feb. 26, 1973, Ser. No. 355,268

Int. Cl. C22f *1/04*

U.S. Cl. 148—11.5 R **1 Claim**

A magnesium-boron composite is made by mechanically mixing magnesium powders with about twenty-five percent

by volume boron powders. The mixed powders are processed by cold pressing, hot pressing, sintering, extruding, rolling, re-extruding, re-rolling, and re-extruding again.



3,827,922

METHOD OF RETARDING METAL SCALE FORMATION WITH CARBON-CONTAINING MgO-B_2O_3 COATINGS

William E. Boggs, Franklin Borough, William A. Linderman, North Versailles Township, Allegheny County, and Roland B. Snow, Mount Lebanon, Pa., assignors to United States Steel Corporation

Filed Sept. 25, 1972, Ser. No. 291,849

Int. Cl. B23k *35/24*

U.S. Cl. 148—27 **10 Claims**

A coating composition containing 75–95% MgO, 2–10% B_2O_3 and 0–15% C, which is effective in retarding oxidation of ferrous metal articles, especially at temperatures in excess of 2150° F. Additional protection is achieved when about 11–17% TiO_2 is substituted for about the same amount of MgO. The composition is admixed with a suitable vehicle and is applied to the metal surface in the form of a dispersion, suspension or as a slurry.

3,827,923

CASE HARDENING SUPER HIGH SPEED STEEL

Richard F. Harvey, Orchard Lake, and George E. Moore, Farmington, Mich., assignors to Sun Steel Treating, Inc.

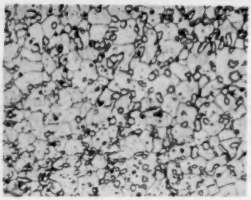
Continuation-in-part of abandoned application Ser. No. 844,580, July 24, 1969. This application Apr. 21, 1972, Ser. No. 246,149

Int. Cl. C22c *35/24*

U.S. Cl. 148—31.5 **10 Claims**

A low carbon, case hardened high speed steel composition and article having a surface hardness in excess of 70 Rockwell C is provided consisting essentially of:

Carbon, .10 up to about .30%
Chromium, about 4%
Molybdenum, about 3–10%
Tungsten about, 1½–7%
Vanadium about, 1–3%
Cobalt about, 4–12%



The balance is substantially iron and carburized at 1725° F., hardened and tempered.

3,827,924

HIGH-STRENGTH ROLLED STEEL SHEETS

Hiroshi Takechi, Kisarazu, and Hiroaki Masui, Minoru Kawaharada, and Motoaki Sugiyama, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 19, 1972, Ser. No. 255,019

Claims priority, application Japan, May 21, 1971, 46/34,625; Feb. 12, 1972, 47/14,321

Int. Cl. C22c *29/00*

U.S. Cl. 148—36 **2 Claims**

A high-strength rolled steel sheet of chemical composition comprising;

C: 0.02–0.10%, Si≦0.7%, Mn: 0.01–0.70%,
P: 0.05–0.25%, Al: 0.005–0.100%

with the balance being iron and unavoidable impurities.

3,827,925

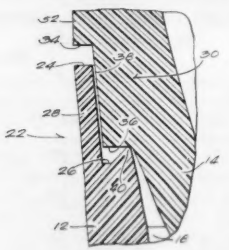
METHOD OF JOINING THE WALLS OF A DOUBLE-WALLED VESSEL

David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220

Filed Oct. 6, 1972, Ser. No. 295,602

Int. Cl. B32b *31/20*

U.S. Cl. 156—73 **5 Claims**



A sealed joint between otherwise spaced apart inner liner and outer jacket of a double-walled, i.e. insulated, vessel is formed by sonic welding. One wall, the liner or

the jacket, is provided with a shoulder defining two relatively spaced but commonly facing surfaces which, in assembly, are positioned in opposed relationship with a similar shoulder and similarly arranged surfaces on the other wall. A projection on one shoulder engages an opposed surface and functions to hold the opposed surfaces of the two walls apart initially. The liner and jacket are subjected to sonic vibrations and the projection directs the energy of the sonic vibrations to the area of limited engagement between it and the surface it engages. The projection and surface contacted thereby liquify and fuse. As liquification and fusion progresses the opposed surfaces are moved together with the sonic vibrations being continued until after the surfaces of one wall shoulder engage and fuse with those of the other to thereby seal the space between the liner and jacket with two concentric welds.

3,827,926

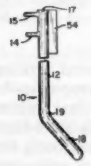
METHOD FOR MOLDING A NASAL CANNULA

Harold R. Havstad, Lakewood, Calif., assignor to Hudson Oxygen Therapy Sales Co.

Original application Mar. 22, 1971, Ser. No. 126,452, now Patent No. 3,731,900. Divided and this application Feb. 9, 1973, Ser. No. 330,963

Int. Cl. B28b *1/24*

U.S. Cl. 156—242 **1 Claim**



A flexible nasal cannula having improved characteristics is produced in a mold cavity incorporating a forming means comprising a transverse core having straight upper portions and a lower portion extending at an angle from the upper portion and a nipple core portion comprising a pair of rod-like extensions located toward the upper end of the upper portion and which extend substantially perpendicular to its axis. In a molding process, the forming means is maintained in spacial relation within a mold cavity, a thermoplastic material is flowed within the cavity around the forming means, cooled sufficiently to set the material and thereafter the cannula is removed from the forming means.

3,827,927

METHOD OF BONDING USING IMPROVED POLYIMIDE ADHESIVES

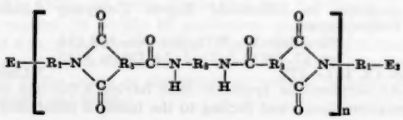
Hyman R. Lubowitz, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,432

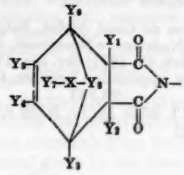
Int. Cl. C09j *5/00;* **B32b** *27/34*

U.S. Cl. 156—331 **5 Claims**

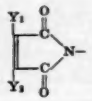
High temperature adhesives are formed by pyrolytically polymerizing compounds of the general formula



where: E_1 and E_2 are individually selected from the class consisting of



and



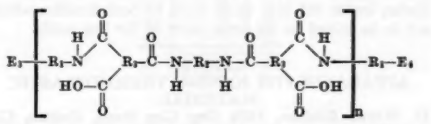
where: X is a member of the class consisting of carbon, oxygen, sulfur, and carbonyl Y_1–Y_6; and Y_7 and Y_8 when present, are individually selected from the class consisting of hydrogen, aromatic groups, substituted aromatic groups, saturated or unsaturated hydrocarbon groups having from 1 to 6 carbon atoms, alkyl ethers, aryl ethers, halogens, and nitro groups;

R_1 and R_2 are individually selected from the class consisting of aromatic groups, substituted aromatic groups, saturated and unsaturated hydrocarbon groups, saturated and unsaturated heterocyclic groups, and mixtures thereof;

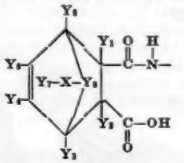
R_3 is selected from the class consisting of substituted aromatic groups, unsubstituted aromatic groups, saturated cyclic groups, unsaturated cyclic groups, saturated heterocyclic groups, and unsaturated heterocyclic groups, and

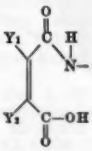
n is one or more for a single prepolymer and statistically greater than 0 for a mixture.

The adhesives may also be formed by pyrolytically polymerizing the novel amic-acid precursors of said prepolymers which are characterized by the formula



where: E_3 and E_4 are individually selected from the class consisting of

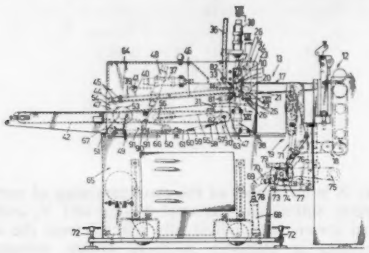




where:

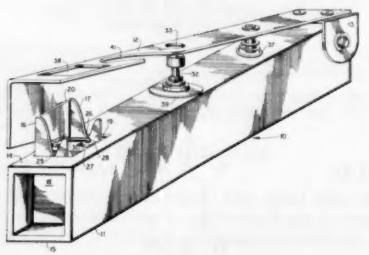
X_1, Y_1–Y_6 and Y_7 and Y_8 are defined as defined above; and R_1, R_2, and R_3 and n are as described above.

3,827,928
METHOD FOR MANUFACTURING SHOPPING BAGS AND DEVICE FOR THE WORKING THEREOF
Edouard Louis van de Gent, Meise, Belgium, assignor to Printex, Neder-over-Heembeek, Belgium
Filed Oct. 19, 1971, Ser. No. 190,562
Claims priority, application Belgium, Oct. 20, 1970, 95,332
Int. Cl. B31b *19/74*; B32b *31/20*
U.S. Cl. 156—423 9 Claims



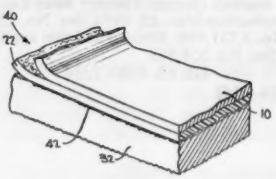
Method for manufacturing shopping bags from sealable plastic material with two handles, in particular bags provided with side bellows, which comprises spreading apart the walls of the bag, introducing inside the bag the handle portions to be welded onto the said walls along a direction opposite to the bag movement direction, bringing the walls of the bag into contacting relationship with the handles, simultaneously welding the handles and releasing the bag provided with its handles in the bag movement direction, the device for working such method which comprises feeding means for the bags with a stepwise movement so as to bring one by one the bag opening directed along the feeding direction, under sealing jaws for on the one hand, spreading the bag walls from one another adjacent the opening thereof and on the other hand, releasing said walls, and means for simultaneously introducing inside the bag, those parts of both handles which are to be joined to the inner sides of the bag walls.

3,827,929
APPARATUS FOR JOINING THERMOPLASTIC MATERIAL
D. Wayne Bledsoe, 1928 Dug Gap Road, Dalton, Ga. 30720, and R. Alton Cadenhead, P.O. Box 810, Fitzgerald, Ga. 31750
Filed Sept. 1, 1972, Ser. No. 285,901
Int. Cl. B65h *69/06, 69/08*
U.S. Cl. 156—502 8 Claims



The apparatus includes supports which position and hold ends of thermoplastic yarn or similar material, and includes a heating element which melts the thermoplastic material to join the yarn ends at the point of heating. Clamping apparatus maintains the yarn ends in position on the heating element. The yarn ends are aligned side-by-side during the joining operation, and the joint can be straightened and smoothed before the melted yarn material cools to its original linear relationship.

3,827,930
PRODUCTION OF POLYURETHANE FILM/SPLIT LEATHER LAMINATE
Robert G. Sutton, Philadelphia, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.
Application Mar. 9, 1970, Ser. No. 17,572, now Patent No. 3,713,938, which is a continuation-in-part of applications Ser. No. 659,101, Aug. 8, 1967, and Ser. No. 737,116, June 14, 1968. Divided and this application Oct. 20, 1971, Ser. No. 191,039
Int. Cl. B32b *3/10*
U.S. Cl. 161—64 3 Claims



Production of laminated articles by casting and drying a layer of a fully-reacted polyurethane material on a release treated carrier in a manner to form a moisture-vapor-permeable and moisture-impermeable film, one or more hides of split leather being bonded to the supported film through a moisture vapor-permeable tie-coat of a compatible adhesive, and the carrier then being removed. The resultant split leather/polyurethane film product has the appearance and other properties of top-grain leather.

3,827,931
SHOCK-PROOF NYLON CARPET SYSTEM
Ronald Edward Rothwell, Colonial Heights, Va., and Cipriano Cipriani, Morristown, N.J., assignors to Allied Chemical Corporation, Morristown, N.J.
No Drawing. Filed July 19, 1972, Ser. No. 273,064
Int. Cl. D03d *27/00*
U.S. Cl. 161—67 13 Claims

A shock-proof carpet system having a face yarn of textured nylon containing up to about twelve weight percent of an internal additive selected from ethylene oxide condensation products, a primary backing of jute or spunbonded synthetic material with or without metal fibers woven into the said backing, a tuft-locking latex made electrically conductive by the additive of up to about ten weight percent of an antistatic material and/or having a fine gauge metallic film, screen, or a mat of metal fibers imbedded therein, and a standard secondary backing.

3,827,932
POLYACRYLONITRILE SYNTHETIC FIBER AND A PROCESS OF MANUFACTURING THE SAME
Zen-Ichi Orito, Nagoya, Hiroshi Sugimoto, Kyoto, Minoru Uchida, Hajime Sahara, and Masatoshi Takesue, Nagoya, and Kiyoharu Nishida, Kariya, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan
Filed July 13, 1971, Ser. No. 162,121
Int. Cl. D02g *3/02, 3/24*; D06m *3/18*
U.S. Cl. 161—172 7 Claims

An acrylonitrile synthetic fiber having a fur-like configuration, touch and feeling to the hand, is composed of

a thicker middle portion and finer tapering portions which extend from the thicker middle portion and have a length longer than ten times the average diameter of the

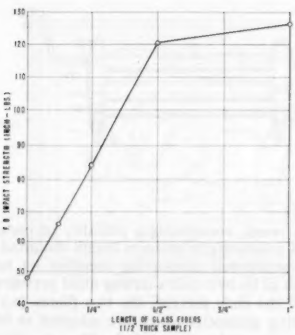
thicker middle portion and an average diameter shorter than half of the average diameter of the thicker middle portion, and have numerous asymmetrical ridges on its surface.

3,827,933

FILLED POLYMETHYL METHACRYLATE ARTICLE AND A PROCESS FOR ITS MANUFACTURE

Ray B. Duggins, Chadds Ford, Pa., and Henry C. Miller, Wilmington, and Eustachios Vassiliou, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1972, Ser. No. 240,650
Int. Cl. C08f *45/10*
U.S. Cl. 161—176 **16 Claims**



Disclosed herein is a filled polymethyl methacrylate article which, by virtue of the fact that it contains 50 to 80 percent by weight of particulate hydrate of alumina and 4 to 20 percent by weight of glass filaments preferably disposed within the article in discrete bundles aligned parallel to the plane of the article, is weather resistant, fire resistant and tough.

3,827,934

PROCESS FOR PRODUCING HIGH STRENGTH, HIGH YIELD HARDWOOD PULP

Michael B. Ringley, Charleston Heights, and Pauli O. Wendelin, Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed June 28, 1971, Ser. No. 157,418
Int. Cl. D21c *3/26*
U.S. Cl. 162—28 **1 Claim**

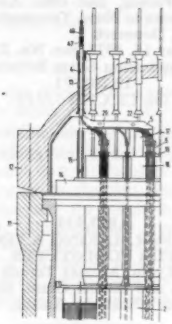
High strength, high yield hardwood pulps are produced by partially fiberizing hardwood fibers during digestion, removing digestion chemicals from the fibers by applying sufficient mechanical force to the fibers to separate said fibers and thereafter washing said fibers and further refining said fibers at a rate sufficient to cause fiberization along the fiber surfaces by interfiber friction without substantially fracturing said fibers. The hardwood pulp produced has a William slowness of less than 18 seconds for a 3-gram sample, a 200 ml. K number of at least 500 and a dirt level of less than 4.0.

3,827,935

APPARATUS FOR IN-CORE INSTRUMENTATION OF PRESSURIZED WATER REACTORS

Wolf Grüner, Hans-Peter Schabert, and Franz Schubert, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 7, 1970, Ser. No. 78,669
Claims priority, application Germany, Oct. 24, 1969, P 19 53 605.1
Int. Cl. G21c *17/10*
U.S. Cl. 176—19 R **13 Claims**



A nuclear reactor of the pressured water type is equipped with in-core instrumentation apparatus which has vertically displaceable instrumentation shafts passing from above through the head cover of the reactor pressure vessel. Yoke structures extend horizontally from each instrumentation shaft in the space between the cover and the core assembly. Finger-like groups of rigid instrument guide tubes for respective measuring probes extend from each yoke downwardly into the core assembly.

3,827,936

PROCESS FOR PREPARING CYCLIC ANDENOSINE MONOPHOSPHATE

Yoshiaki Shimizu, Toshio Tatano, Yoshiyuki Akiyama, and Akira Yamaguchi, Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed Oct. 1, 1971, Ser. No. 194,688
Claims priority, application Japan, Nov. 2, 1970, 45/95,876
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **14 Claims**

The present invention relates to a process for preparing cyclic adenosine monophosphate (hereinafter desig-

nated as "cyc-AMP") in good yield. More particularly, the present invention relates to a process for preparing cyc-AMP (i.e. adenosine-2', 3'-phosphate) by way of enzymatic synthesis in which the adenosine phosphate, such as adenosine monophosphate (hereinafter designated as "AMP"), adenosine diphosphate (hereinafter designated as "ADP"), adenosine triphosphate (hereinafter designated as "ATP") etc. is reacted with an enzyme substrate obtained by fermentation of a microorganism having an adenylcyclase-activity, and characterized in that the reaction is carried out in the presence of at least one chelating agent.

3,827,937
METHOD OF PRODUCING PULLULAN
Koso Kato and Makoto Shiosaka, Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated, Okayama-ken, Japan
No Drawing. Filed Oct. 2, 1972, Ser. No. 294,167
Claims priority, application Japan, Oct. 11, 1971, 46/79,413
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 P **8 Claims**

Pullulan is produced by aerobic, microbial fermentation of starch hydrolyzate having a dextrose equivalent (D.E.) of 20–70 in yields superior to those achieved heretofore by fermentation of sucrose or glucose, which are more costly carbon sources.

3,827,938
ENZYME PRODUCTS
Knud Aunstrup, Farum, and Otto Andresen, Maalov, Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Bagsvaerd, Denmark
Filed May 15, 1972, Ser. No. 253,461
Claims priority, application Great Britain, May 28, 1971, 18,201/71
Int. Cl. C12d *13/10*
U.S. Cl. 195—62 **3 Claims**

An alkaline proteolytic enzyme obtained by submerged aerobic cultivation of the microorgnism *Bacillus firmus* NRS 783.

3,827,939
PROCESS FOR MAKING A PROTEASE FOR FOODSTUFFS
Tatsuro Tanaka, Kyoto, Masaki Terada and Mitsumune Takatsu, Osaka, and Shohei Otani, Hyogo, Japan, assignors to Nissin Shokuhin Kaisha, Ltd., Takatsuki, Osaka, Japan
Filed Feb. 22, 1972, Ser. No. 228,072
Claims priority, application Japan, June 23, 1970, 45/56,360; Aug. 13, 1970, 45/71,043
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **1 Claim**

An improved method for making protein-containing foodstuffs is provided through the treatment of the protein with a protease which allows a breakdown of the protein into simpler peptide units. A method for obtaining the novel protease of the invention is provided by culturing the microorganism *Streptomyces tanakasis* sp. 4680.

3,827,940
PREPARATION OF α-1,6-GLUCOSIDASE
Kaname Sugimoto, Mamoru Hirao, and Kazuo Masuda, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan
Continuation of abandoned application Ser. No. 810,293, Mar. 25, 1969. This application Mar. 23, 1972, Ser. No. 237,578
Claims priority, application Japan, Apr. 1, 1968, 43/21,364
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R **4 Claims**

α-1,6-glucosidases which are capable of selectively hydrolyzing the alpha-1,6-glucoside bonds of starch and which have high heat resistance and activity are produced from strains of bacteria belonging to the genus Agrobacterium, Azotobacter, Bacillus, Erwinia, Lactobacillus, Leuconostoc, Micrococcus, Mycobacterium, Nocardia, Pediococcus, Sarcina, Serratia, Staphylococcus and Streptococcus.

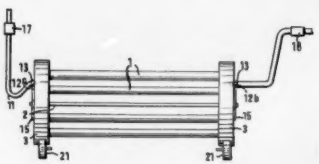
3,827,941
MICROBIAL CONVERSION OF 11-ACETYL-ERYTHROMYCIN B TO ERYTHROMYCIN B
Robert John Theriault, Kenosha, Wis., and William Leonard Kohl, Spring Grove, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
No Drawing. Filed Oct. 2, 1972, Ser. No. 294,061
Int. Cl. C12b *1/00*
U.S. Cl. 195—80 **1 Claim**

Covers a method of performing the microbial conversion of 11-acetylerythromycin B to erythromycin B.

3,827,942
BLOOD AGAR CULTURE MEDIUM
Alice Marie Janik, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
No Drawing. Filed Nov. 13, 1972, Ser. No. 305,976
Int. Cl. C12k *1/10*
U.S. Cl. 195—100 **10 Claims**

A blood agar bacteriological culture medium having improved storage life is formed from a solidified aqueous mixture of agar, tryptose, polyvinylpyrrolidone, sodium chloride or sorbitol and blood the cells of which have been pretreated with a mixture of adenine and inosine. This culture medium can be placed in a petri dish to form a prepoured culture plate or it can be formed on a suitable substrate and partially dehydrated to form a rehydratable culture pad.

3,827,943
CULTURE APPARATUS
George Forbes Mann, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Filed Sept. 9, 1971, Ser. No. 179,032
Claims priority, application Great Britain, Sept. 17, 1970, 44,432/70
Int. Cl. C12b *1/04*
U.S. Cl. 195—127 **10 Claims**

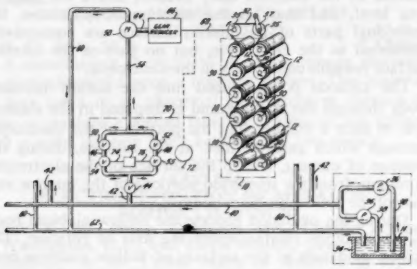


A culture vessel, comprising a plurality of parallel culture tubes of substantially uniform length mounted around a centrally positioned supporting member by manifold plates at each of its two ends exerting axial pressure on the tubes to seal the ends thereof, the two plates (a) having communicating channels, which are adapted to interconnect all the tubes and are provided with a common inlet/outlet first opening on one of the end-plates which can be connected to a service tube equipped with flow controlling means, and a common second opening on the other end-plate which can be used with a filter tube, (b) being mounted on the supporting member and (c) being adapted to locate and hold the tubes to form a sealed vessel capable of being detached from general supporting means and being rolled by driving means, and its use in the cultivation of microbiological material in liquid suspension.

3,827,944
WAX CRYSTAL GROWTH CONTROL IN OIL DEWAXING PLANTS

Rino L. Godino, Livingston, and Oliver Morfit, Green Village, N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed May 24, 1973, Ser. No. 363,707
Int. Cl. C10g *43/00*; B01d *9/04*
U.S. Cl. 196—14.5 **12 Claims**

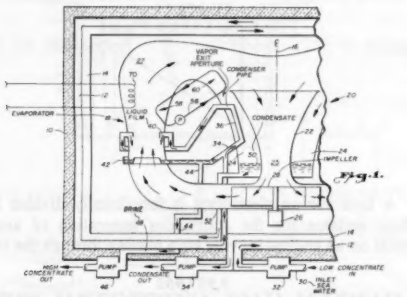


The rate of wax crystal growth in an oil dewaxer having cooled pipes through which the oil is flowed and in which scrapers are rotated to remove the wax, is controlled to assure efficient filter operation downstream. The scrapers are rotated at a comparatively slow rotational speed for a given period of time to provide for optimum growth rate of wax crystals and then automatically rotated at a higher rate of speed to clean the interior of the pipe so that the wax can continue to crystallize.

3,827,945
DISTILLATION APPARATUS

James D. Wixson, 902 Marine St., Boulder, Colo. 80302

Original application Aug. 6, 1969, Ser. No. 850,325, now Patent No. 3,637,465. Divided and this application Jan. 24, 1972, Ser. No. 220,391
Int. Cl. B01d *3/00, 3/08, 3/28*
U.S. Cl. 202—177 **8 Claims**

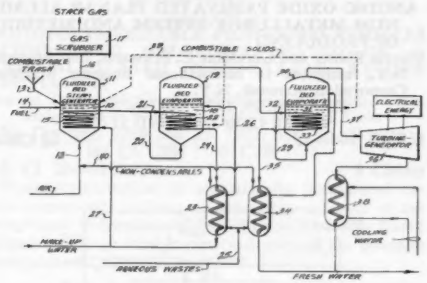


The invention relates to purification of liquids by distillation. Processes of this nature have long been known. One well known example is the conversion of sea water to fresh water by distillation. The purpose of the invention is to accomplish the distillation with maximum efficiency. As is well known, in distilling a liquid the impure liquid is heated so as to vaporize the portion of the liquid sought to be recovered, thereby separating the material to be recovered from the material to be rejected by virtue of the fact that they exist in different phases. Having separated the components by phase the vapor is then transferred to another region where its temperature is lowered so that it condenses in a region separate from the impure mixture and thus is recovered.

3,827,946
METHOD FOR THE DISPOSAL OF COMBUSTIBLE AND DILUTE AQUEOUS WASTES

Earl S. Grimmett and Philip E. Lamont, Idaho Falls, Idaho, assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed June 5, 1972, Ser. No. 259,797
Int. Cl. B01d *3/00*
U.S. Cl. 203—10 **2 Claims**

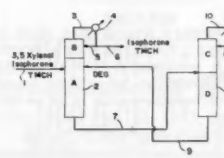


A method for the disposal of combustible and dilute aqueous wastes in which potable water and useful power are produced. Combustible waste, together if necessary with conventional fuel, is burned in a fluidized-bed steam generator; the steam thus produced is used to evaporate dilute aqueous wastes in the first stage of a two-stage fluidized-bed evaporator; the steam in the first stage is used to evaporate dilute aqueous wastes in the second stage of the two-stage fluidized-bed steam generator; the steam produced in the second stage is used to generate power; and the spent steam from the first and second fluidized-bed evaporators is condensed as potable water.

3,827,947
PURIFICATION OF 3,5-XYLENOL BY EXTRACTIVE DISTILLATION

Frank W. Melpolder, Wallingford, Pa., Edward G. Guetens, Glendora, N.J., and Walter A. Mamenskis, Drexel Hill, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 28, 1973, Ser. No. 336,858
Int. Cl. B01d *3/40*; C07c *37/38*
U.S. Cl. 203—64 **5 Claims**



Method for the separation of isophorone and other impurities from 3,5-xylenol by extractive distillation with hydroxylated solvents, in particular diethylene glycol.

3,827,948

METHOD FOR DETECTING CANCER TISSUE BY POLAROGRAPH

Shun-Ichi Hata, Yokohama, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed July 9, 1973, Ser. No. 377,437
Claims priority, application Japan, July 27, 1972, 47/74,635
Int. Cl. G01n 27/48
U.S. Cl. 204—1 T 10 Claims

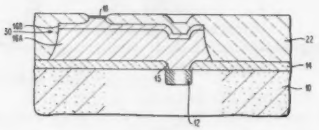
A method for detecting a cancer tissue by measuring a polarographic wave in the range of from −1.0 to −2.0 v. vs. S.C.E. on an extract of a suspected tissue at a pH value of from 5 to 7 in the presence of an alkali metal halide to determine the presence of a polarographic wave at around −1.90 to −1.95 v. vs. S.C.E. which is a characteristic of the cancer tissue is disclosed.

3,827,949

ANODIC OXIDE PASSIVATED PLANAR ALUMINUM METALLURGY SYSTEM AND METHOD OF PRODUCING

Valeria Platter and Geraldine C. Schwartz, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,082
Int. Cl. C23b 5/48; H01l 11/00
U.S. Cl. 204—15 10 Claims



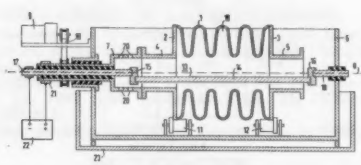
A method of fabricating an anodic oxide passivated aluminum interconnection metallurgy system on a semicondutor material having an overlying insulating layer by depositing a layer of aluminum on this substrate, anodizing the aluminum layer to form a surface layer of Al_2O_3, depositing, exposing, and developing a photoresist layer on the surface of the Al_2O_3 layer which overlies the desired metallurgy pattern, removing the exposed portions of the Al_2O_3 layer, anodizing the exposed aluminum in an anodizing bath to produce a porous Al_2O_3 layer.

3,827,950

METHOD FOR ANODIC OXIDATION OF THE INTERIOR SURFACE OF A HOLLOW NIOBIUM BODY PROVIDED WITH AT LEAST ONE OPENING

Heinrich Diepers, Erlangen-Bruck, and Otto Schmidt and Reinhard Kress, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 15, 1972, Ser. No. 289,547
Claims priority, application Germany, Sept. 18, 1971, P 21 46 785.6
Int. Cl. C23b 5/56, 5/78
U.S. Cl. 204—26 9 Claims



The invention relates to a method for the anodic oxidation of the interior surface of a hollow niobium body provided with at least one opening. In order to avoid the usually occurring disturbing effects of the gases produced at the cathode during the polishing of the niobium layer, the hollow niobium body, according to the invention, is immersed only partially in the electrolyte and is arranged rotatably about an axis extending through the opening in such a manner that in any position of the niobium body a vapor space exists which is connected with the external environment through the opening between the electrolyte level and all parts of the interior surface of the niobium body situated above the electrolyte level, and that, as the niobium body rotates, the individual parts of its interior surface are successively immersed in the electrolyte, but no part of the interior surface remains continually in the electrolyte.

The cathode is introduced into the hollow niobium body through the opening and is disposed in the electrolyte in such a manner that the portion of the electrolyte through which gases formed at the cathode, during the passage of current, rise to the surface of the electrolyte, is remote from the immersed portions of the interior surface of the hollow niobium body.

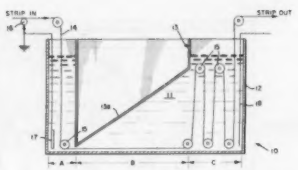
During the oxidation process the hollow niobium body is continuously rotated about the axis of rotation. The anodic oxidation of the surfaces of hollow niobium bodies by the present process improves the properties thereof. The process is particularly adapted for use in polishing cavity resonators, particle separators and cable sleeves.

3,827,951

CONTINUOUS FORMING OF ANODES FOR CAPACITORS

Milton Kallianides, Brockton, and Gerhard P. Klein, Manchester, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Application Feb. 19, 1971, Ser. No. 117,023, now Patent No. 3,736,237, which is a division of application Ser. No. 880,487, Dec. 10, 1969, now Patent No. 3,616,425, which in turn is a continuation of abandoned application Ser. No. 670,723, Sept. 26, 1967. Divided and this application May 22, 1972, Ser. No. 255,894
Int. Cl. B01k 3/00; C23b 9/00
U.S. Cl. 204—28 4 Claims



A tank for an electrolyte is functionally divided into three sections for the continuous generation of anodic oxide on an endless moving strip passing through the tank.

3,827,952

ALUMINUM ALLOY ARCHITECTURAL SHEET PRODUCT AND METHOD FOR PRODUCING

Edmund C. Franz, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Filed Sept. 20, 1972, Ser. No. 290,653
Int. Cl. C23b 9/02; C22f 1/04
U.S. Cl. 204—29 12 Claims

Improved aluminum alloy sheet containing silicon, copper and chromium in controlled amounts and having a high purity aluminum base is capable of producing integrally colored anodic coatings and is highly formable. The integral coatings can range in color from gold through bronze shades to a true black. The alloy has im-

proved corrosion resistance and is highly suited for architectural applications. The production of the alloy sheet product includes a high temperature homogenization together with controlled hot and warm rolling practices to achieve a fine internal structure.

3,827,953

PROCESS FOR COATING REFRACTORY METALS WITH OXIDATION-RESISTANT METALS

Charles W. Haldeman, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 19, 1969, Ser. No. 851,258
Int. Cl. C23b *5/52*
U.S. Cl. 204—37 R **7 Claims**

A nonadherent electroplate of porous spongy platinum is electrodeposited upon a tungsten surface. This material is then fused in an abnormal glow-discharge furnace or tube to produce a melted layer of coating on the surface and a solid solution bond between the two metals.

3,827,954

ELECTRODEPOSITION OF METALLIC BORIDE COATINGS

Frank X. McCawley, Cheverly, Md., Charlie Wyche, Washington, D.C., and David Schlain, Greenbelt, Md., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Continuation-in-part of application Ser. No. 816,020, Apr. 14, 1969, now Patent No. 3,697,390. This application Aug. 17, 1972, Ser. No. 281,353
The portion of the term of the patent subsequent to Oct. 10, 1989, has been disclaimed
Int. Cl. C23b *5/00*
U.S. Cl. 204—39 **9 Claims**

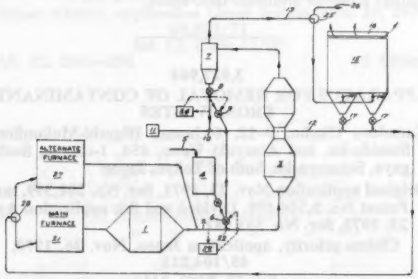
Titanium diboride is electroplated on conductive substrates from a fused, borate-type bath. Use of a titanium diboride anode allows increased plating rates, enhances bath stability and decreases bath conditioning time compared to use of a titanium metal anode.

3,827,955

CLEANING WASTE GASES CONTAINING HYDROGEN FLUORIDES FROM AN ELECTROLYTIC FURNACE FOR ALUMINUM PRODUCTION

Marcel Bahri, Duvnas, and Kurt Carlsson, Vaxjo, Sweden, assignors to AB Svenska Flaktfabriken, Nacka, Sweden

Filed Sept. 29, 1972, Ser. No. 293,496
Claims priority, application Sweden, Oct. 27, 1971, 13,676/71
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 **6 Claims**



Alumina is injected into the waste gases in an amount controlled according to the concentration of hydrogen fluoride therein. The gases are caused to flow turbulently through a reactor and then through separators so that the alumina (and adsorbed hydrogen fluoride) may be directed into the furnaces and the cleansed gases may be discharged.

3,827,956

PHOTOPOLYMERIZABLE PIGMENTED VEHICLES CONTAINING CHLOROSULFONATED OR α-HALOALKYLATED BENZANTHRONE INITIATORS

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,087
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.23 **9 Claims**

Photopolymerization of ethylenically unsaturated organic compounds utilizing photosensitive catalysts of the halogenated polynuclear ketone type is disclosed. Rapid polymerization or cure is observed even in the presence of organic and inorganic pigments.

3,827,957

PHOTOPOLYMERIZABLE PIGMENTED VEHICLES CONTAINING CHLOROSULFONATED OR α-HALOALKYLATED POLYNUCLEAR KETONE INITIATORS

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,031
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.23 **8 Claims**

Photopolymerization of ethylenically unsaturated organic compounds utilizing photosensitive catalysts of the halogenated polynuclear ketone type is disclosed. Rapid polymerization or cure is observed even in the presence of organic and inorganic pigments.

3,827,958

PHOTOPOLYMERIZABLE PIGMENTED VEHICLES CONTAINING CHLOROSULFONATED OR α-HALOALKYLATED FLUORENONE INITIATORS

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,088
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.23 **9 Claims**

Photopolymerization of ethylenically unsaturated organic compounds utilizing photosensitive catalysts of the halogenated polynuclear ketone type is disclosed. Rapid polymerization or cure is observed even in the presence of organic and inorganic pigments.

3,827,959

PROCESS FOR PHOTOPOLYMERIZATION WITH CARBONYLATED PHENYL NUCLEAR SULFONYL CHLORIDE SENSITIZER

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,032
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.24 **4 Claims**

U.V. polymerization of a photopolymerizable vehicle is improved by incorporating into the vehicle about 0.5–5% by weight of a carbonylated phenyl nuclear sulfonyl chloride.

3,827,960

PROCESS FOR PHOTOPOLYMERIZATION WITH CARBONYLATED POLYNUCLEAR SULFONYL CHLORIDE SENSITIZERS

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

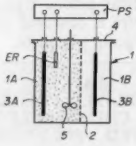
No Drawing. Filed Jan. 12, 1973, Ser. No. 323,086
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.24 **7 Claims**

U.V. polymerization of a photopolymerizable vehicle is improved by incorporating into the vehicle about 0.5–5% by weight of a carbonylated polynuclear sulfonyl chloride.

3,827,961
METHOD FOR PURIFYING IONICALLY CONDUCTING SOLUTIONS

Denis Doniat, Moillesulaz, Augusto Porta, Troinex, Geneva, and Jacques Mosetti, Grand-Lancy, Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Geneva, Switzerland

Filed Aug. 31, 1971, Ser. No. 176,572
Claims priority, application Switzerland, Sept. 15, 1970, 13,661/70
Int. Cl. B01k 5/00
U.S. Cl. 204—180 R 4 Claims

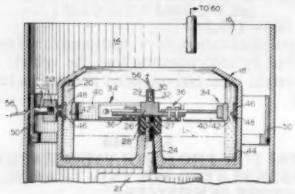


For purifying ionically conducting solutions by electroadsorption, two collector electrodes separated by a porous partition are used to produce an electrical field in the solution to be purified. At least on one side of the partition, the solution is brought into contact with particles of an adsorbent, electrically conducting material for adsorbing at least one constituent of the solution. Relative movement of the solution with respect to the corresponding electrode provides simultaneous electrical contact between the electrode, the solution and the particles. The electrode is at a given potential with respect to the solution and brings the adsorbent particles to the same potential so as to provide electroadsorption of the constituent.

3,827,962
APPARATUS FOR ELECTRODEPOSITION OF METALS UNDER THE INFLUENCE OF A CENTRIFUGAL FORCE FIELD

Iqbal Ahmad, 18 Barney Road, Elnora, N.Y. 12065

Original application Jan. 21, 1969, Ser. No. 792,683. Divided and this application June 1, 1971, Ser. No. 148,947
Int. Cl. C23b 5/68
U.S. Cl. 204—212 3 Claims

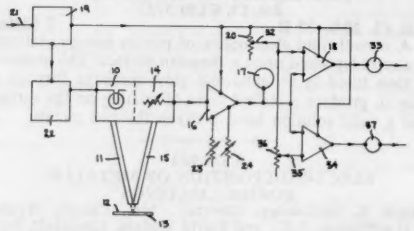


This invention relates to the electrodeposition of metals and alloys and provides process and apparatus for depositing metals under the influence of centrifugal force to increase the efficiency of the operation and produce metal deposits of superior quality respective to density and modulus of elasticity.

3,827,963
REFLECTIVITY-RESPONSIVE CONTROL SYSTEM FOR ELECTROLYTIC FINISHING APPARATUS

Norman F. Callahan, Stevenson, Conn., assignor to Electrometallurgical Sales, Division of the Gilbert Tramer Co., Cleveland, Ohio

Filed Jan. 2, 1973, Ser. No. 320,519
Int. Cl. B01k 3/00; C23b 9/02
U.S. Cl. 204—228 11 Claims



In connection with apparatus for anodizing aluminum or electroplating metals and the like, the work-piece which is to be subjected to the electrolysis is held or clamped in a fixture in the electrolytic bath so as to have a regulated light beam focused upon it during the process of electrolysis. The intensity of the light reflected from the work-piece is sensed by a transducer in the form of a photo-electric cell which converts it into an electrical current whose voltage is amplified and fed to an electrical comparator, in the form of a potentiometer, which monitors the changing voltage as the electrolysis of the work-piece proceeds. A target voltage for the comparator is established by one of several alternative means, and when balance is achieved between the target voltage and the transduced reflected light voltage, a process-arrest circuit is actuated or energized which can directly terminate the electrolytic process or can activate a signal by means of which an operator can be altered to terminate the electrolysis. In one modification of the control system which is particularly useful in the control of anodizing procedures, a second comparator device is used which achieves balance before the target voltage is achieved and acts to switch the electrolysis process from a current mode to a voltage mode to minimize halo effect.

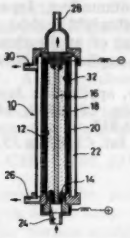
3,827,964
APPARATUS FOR REMOVAL OF CONTAMINANTS FROM WASTES

Katsuhiro Okubo, 9–12, 6-chome, Higashi-Mukoujima, Sumida-ku, and Atsuyuki Ueno, 454, 1-chome, Soshigaya, Setagaya-ku, both of Tokyo, Japan

Original application Nov. 23, 1971, Ser. No. 201,399, now Patent No. 3,764,499. Divided and this application Apr. 23, 1973, Ser. No. 353,542
Claims priority, application Japan, Nov. 26, 1970, 45/104,213
Int. Cl. B01k 3/10
U.S. Cl. 204—257 10 Claims

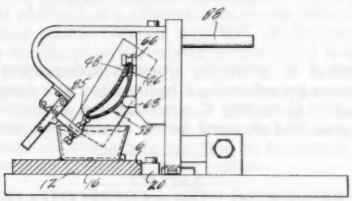
An electrolytic cell is partitioned by a membrane into two electrolytic chambers which are filled with electric conductors in a granular or fibrous form with positive and negative major electrodes respectively thereby to form an anode chamber and a cathode chamber in abutting

relation through the membrane. The anode chamber or the cathode chamber filled with the granular or fibrous



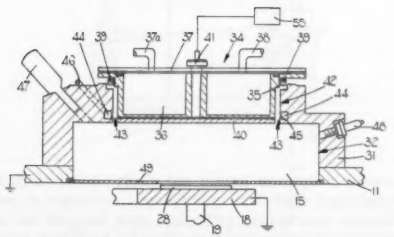
conductors with major electrodes may be replaced by a porous conductive metal sleeve.

3,827,965
ELECTROCHEMICAL DRILLING APPARATUS
Laurance R. Andrews, Agawam, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 2, 1973, Ser. No. 328,997
Int. Cl. B23p *1/02*
U.S. Cl. 204—297 R **10 Claims**



A fixture for holding a workpiece during an electrochemical drilling operation which is loaded by a mechanism that properly locates the workpiece in the fixture.

3,827,966
SPUTTERING APPARATUS
Victor Needham, Balsall Common, England, assignor to Lucas Aerospace Limited, Birmingham, England
Filed Dec. 29, 1972, Ser. No. 319,389
Claims priority, application Great Britain, Dec. 29, 1971, 60,502/71
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **3 Claims**

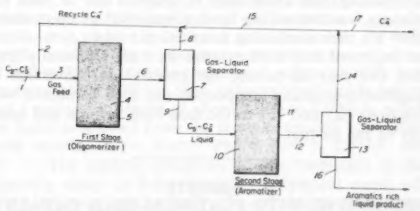


A sputtering apparatus has a cathode arrangement of circular cross section which extends into a chamber for holding an inert gas at a low pressure. An annular conduit surrounds the cathode arrangement and gas can be supplied through said conduit into said chamber by means of a port arrangement which extends around said cathode so as to have an even distribution of gas about the cathode axis.

3,827,967
THERMAL CRACKING OF HYDROCARBONS
Cornelis Nap, Adriaan van Haarlem, and Emile O. H. M. Ruempol, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Aug. 30, 1973, Ser. No. 392,892
Int. Cl. C07r *3/30;* **C10g** *9/16, 23/00*
U.S. Cl. 208—48 R **4 Claims**

In the thermal cracking of hydrocarbons the formation of coke deposits and concomitant carburization of iron containing reaction zone surfaces is retarded by carrying out the thermal cracking operation in a reactor wherein the walls of the reactor in contact with the process flow have been coated with a protective overlayer of a metal selected from the class consisting of aluminum and aluminum alloys melting below 1250° C., said coating preferably having interspersed therein a catalytic anti-coke deposition substance made up of a mixture of iron (III) oxide, chromium (III) oxide and potassium carbonate. The protective overlayer or coating employed in the process of the invention is applied to the walls of the reactor in particulate form in admixture with a soldering flux which liquefies at temperatures below the melting point of the particulate metal and catalyst mixture; the reactor walls are maintained at a temperature at which the soldering flux is liquid for a time sufficient to dissolve a substantial portion of the metal oxide present on the reactor wall surface and the reactor walls are then heated to a temperature sufficient to melt the particulate metal which on cooling and removal of the excess flux forms the protective overlayer of the invention.

3,827,968
AROMATIZATION PROCESS
Edwin N. Givens, Pitman, Charles J. Plank, Woodbury, and Edward J. Rosinski, Deptford, N.J., assignors to Mobil Oil Corporation
Filed Jan. 11, 1973, Ser. No. 322,812
Int. Cl. C07c *5/30;* **C10g** *39/00*
U.S. Cl. 208—49 **6 Claims**



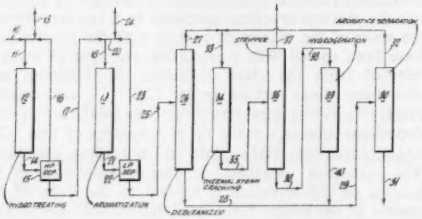
In a recently discovered process, a feed of olefins, naphthenes or a mixture of these with or without paraffins and/or aromatics are aromatized in good yields by contact, in the absence of added hydrogen, with a ZSM–5 type of zeolite catalyst at elevated temperatures, relatively low space velocities, and generally severe conditions. There is disclosed here an improvement in this process obtained by first oligomerizing the olefin content of the feed to higher molecular weight olefins by contacting such with

a ZSM–5 type of zeolite catalyst under much milder conditions than the aforesaid aromatization conditions and then, if desired, feeding the liquid product of this oligomerization to an aromatization stage. Both stages are operated in the absence of added hydrogen.

3,827,969
CONVERSION OF PARAFFINS

Raymond F. Wilson and Reese A. Peck, Fishkill, and Li C. Mih, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,568
Int. Cl. C10g *23/00, 35/04, 39/00*
U.S. Cl. 208—89 10 Claims



Paraffinic gasoline blending components may be upgraded by aromatization, recovery of aromatics, and thermally steam cracking the remaining paraffins to yield as total product, an olefin fraction and an aromatic fraction.

3,827,970
JET FUEL PROCESS

Gary Z. Whitten, Lafayette, and Donald H. Rowe, Walnut Creek, Calif., assignors to Shell Oil Company, Houston, Tex.

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,970
Int. Cl. C10g *13/00, 37/04*
U.S. Cl. 208—93 5 Claims

A process for producing an improved Jet A or Jet A–1 aviation turbine fuel having increased API gravity and smoke point and reduced aromatics content by separating a full boiling range jet fuel into (a) a light fraction boiling from about 290° F. to about 400° F., (b) a middle fraction boiling from about 400° F. to about 480° F., and (c) a heavy fraction boiling from about 480° F. up to about 550° F.; then combining fractions (a) and (c) to obtain an improved full boiling range jet fuel. Optionally fraction (b) may be treated for removal or conversion of naphtheno-aromatic compounds and then combined with fractions (a) and (c) to increase both volume and quantity of the jet fuel.

3,827,971
REFORMING WITH PLATINUM-LEAD CATALYST

Naoya Kominami, Tokyo, and Toshiyuki Iwaisako and Kusuo Ohki, Saitama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

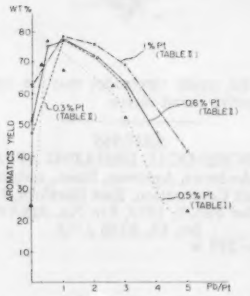
Continuation-in-part of application Ser. No. 6,948, Jan. 29, 1970. This application Nov. 18, 1971, Ser. No. 200,023
Int. Cl. C10g *35/06;* B01j *11/78*
U.S. Cl. 208—139 4 Claims

Method of producing aromatic hydrocarbons which comprises hydroforming a hydrocarbon at a temperature from 300° C. to 650° C. over a catalyst comprising platinum and lead and prepared by first impregnating a carrier with platinum and thereafter with lead.

3,827,972
METHOD OF PRODUCING AROMATIC HYDROCARBONS

Naoya Kominami, Tokyo, and Toshiyuki Iwaisako and Kusuo Ohki, Saitama-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of application Ser. No. 6,948, Jan. 29, 1970. This application Nov. 18, 1971, Ser. No. 200,064
Claims priority, application Japan, Feb. 10, 1969, 44/9,488; Aug. 28, 1969, 44/67,617; Dec. 25, 1969, 44/103,817
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 8 Claims

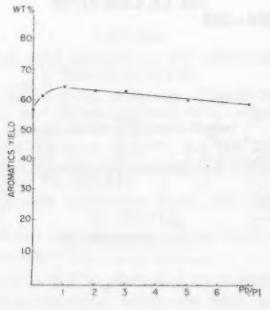


Method of producing aromatic hydrocarbons which comprises hydroforming a hydrocarbon at a temperature from 300° C. to 650° C. over a catalyst comprising platinum and lead prepared by an impregnation procedure.

3,827,973
REFORMING WITH A COPRECIPITATED PLATINUM-LEAD CATALYST

Naoya Kominami, Tokyo, and Toshiyuki Iwaisako and Kusuo Ohki, Saitama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Continuation-in-part of application Ser. No. 6,948, Jan. 29, 1970. This application Nov. 18, 1971, Ser. No. 200,071
Claims priority, application Japan, Feb. 10, 1969, 44/9,488; Aug. 28, 1969, 44/67,617, Dec. 25, 1969, 44/103,817
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 10 Claims



Method of producing aromatic hydrocarbons which comprises hydroforming a hydrocarbon at a temperature

from 300° C. to 650° C. over a catalyst comprising platinum and lead and prepared by a coprecipitation procedure.

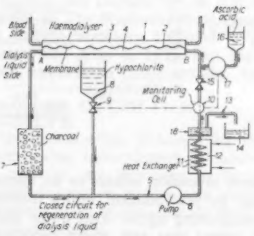
3,827,974
PROCESS FOR THE PURIFICATION OF LIGHT PARAFFINIC PETROLEUM DISTILLATES
Raymond M. Cahen, Woluwe St. Pierre, Henri R. Debus, Meise, and Rene L. Aga, Grimbergen, Belgium, assignors to Labofina S.A.
No Drawing. Filed Oct. 18, 1971, Ser. No. 190,386
Claims priority, application Belgium, Feb. 5, 1971, 99,431
Int. Cl. C10g *23/02, 23/04*
U.S. Cl. 208—143 **5 Claims**

A continuous process for the purification of light paraffinic fraction boiling in the range of 25° to 100° C. and containing as major portion straight chain paraffins, branched paraffins and cycloparaffins and as a minor portion an impurity selected from the group consisting of aromatic hydrocarbons, sulphur-containing compounds, nitrogen-containing compounds, and other non-hydrocarbon impurities, and mixtures thereof, the sulphur content being no greater than 500 p.p.m., said process comprising:

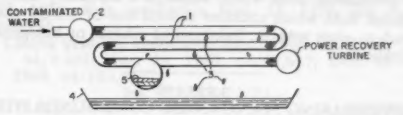
hydrogenating said light paraffinic fraction at a temperature in the range of 150 to 375° C., under a partial pressure of hydrogen of 10 to 100 kg./cm.², at a space velocity of 0.5 to 20 v./v./h. and a hydrogen to hydrocarbon ratio of 100 to 3.000 Nm.³/m.³, in the presence of a hydrogenating catalyst containing between 0.1 and 2% of platinum on a silica-alumina carrier, silica being in major quantity, and at least 30% of the platinum being distributed on the catalyst surface which is accessible to the reactants,

fractionating the products of the hydrogenation to separate the hydrogenated sulphur- and nitrogen-containing compounds and to recover a paraffinic fraction substantially containing only paraffinic hydrocarbons with an increased content of cycloparaffins.

3,827,975
PROCESS FOR THE REGENERATION OF A HAEMODIALYSIS LIQUID
Jean Bizot, Morangis, and Andre Sausse, Sceaux, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Dec. 14, 1972, Ser. No. 314,672
Claims priority, application France, Dec. 14, 1971, 71.44867
Int. Cl. B01d *13/00, 31/00*
U.S. Cl. 210—22 **14 Claims**



Dialysis liquid which has passed through a haemodialyser, is regenerated by addition of sodium hypochlorite. This can degrade urea and other nitrogenous impurities without producing by-products incompatible in a dialysing liquid for use in haemodialysis. A dialysis liquid of relatively small volume can thus be circulated in closed circuit through a haemodialyser.

3,827,976
PROCESS FOR CLEANING REVERSE OSMOSIS MEMBRANES
Regis R. Stana, Murrysville, Pa., and Joseph Markind, Moorestown, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 11, 1972, Ser. No. 270,773
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **9 Claims**

A process for cleaning reverse osmosis membranes which have been contaminated with water insoluble foulants comprises the steps of (A) contacting the reverse osmosis membrane, under pressure, with a cleaning solution containing, per liter of water, about 0.25–2.5 ml. of an organic non-ionic surfactant, about 20–75 grams of at least one salt selected from Na_2SO_4, K_2SO_4 and NaCl, and at least one mineral acid selected from hydrochloric and sulfuric acid in an amount effective to provide a cleaning solution having a pH between about 1.5–4.0 (B) releasing the pressure on the reverse osmosis membrane, and (C) flushing the solution from the membrane.

3,827,977
COMPOSITION FOR INHIBITING SCALE FORMATION IN OIL WELL BRINES
Leon H. Miles, Plano, and Graham E. King, Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Application Nov. 25, 1969, Ser. No. 879,919, now Patent No. 3,704,750, which is a continuation-in-part of abandoned application Ser. No. 789,927, Jan. 8, 1969. Divided and this application Oct. 2, 1972, Ser. No. 294,249
Int. Cl. C10m *5/12*
U.S. Cl. 252—8.55 B **9 Claims**

A method for introducing an inhibitor, e.g., an inhibitor against scale formation, into oil well brines is disclosed. This method comprises introducing into the porous reservoir structure, i.e., oil-bearing formation adjacent to the bore of an oil well a relatively water or brine insoluble polyvalent metal salt of the inhibitor, e.g., polyacrylic acid and/or hydrolyzed polyacrylamide, the polyacrylic acid having a molecular weight range of about 17,000 to 50,000, and the hydrolyzed polyacrylamide having from about 10% to 50% unhydrolyzed amide groups and a molecular weight of about 1,000 to 8,000, in which the metal is selected from the group consisting of alkaline earth metals, Zn^{++}, Cu^{++}, Pb^{++}, Fe^{+++}, Cr^{+++}, and Al^{+++}. The method comprises in situ formation of the relatively water or brine insoluble polyvalent metal salt of the inhibitor e.g., polyacrylic acid and/or hydrolyzed polyacrylamide, in the reservoir structure by introducing into the porous structure a water-soluble salt of the inhibitor, e.g., the sodium salt of the polyacrylic acid and/or hydrolyzed polyacrylamide, and a water-soluble salt of the polyvalent metal in a strongly acidic, aqueous solution. In the in situ method the strong acid in solution initially inhibits reaction of the salts but is dissipated by the fluids in the oil-bearing formation and neutralized by the formation rock to allow reaction and formation of the desired water-insoluble metal salt of polyacrylic acid and/or hydrolyzed polyacrylamide in the formation.

3,827,978
PACKER FLUID FOR DRILLING AND COMPLETING A WELL

Leon H. Miles, Plano, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Original application Dec. 14, 1970, Ser. No. 98,163, now Patent No. 3,700,050. Divided and this application Aug. 9, 1972, Ser. No. 279,088
Int. Cl. E21b *43/00*
U.S. Cl. 252—8.55 R **10 Claims**

A method for drilling and/or producing a well through a permafrost zone which employs a thermally insulated packer fluid which contains at least one of hollow shapes such as glass spheres, halogenated ethane, or halogenated ethylene.

3,827,979
OVERBASING MANGANESE COMPOUNDS WITH PROMOTERS AND COPROMOTERS

Alfred B. Piotrowski, Woodbury, and Harry J. Andress, Jr., Pitman, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed May 3, 1971, Ser. No. 139,940
Int. Cl. C10m *1/40, 3/34;* C10l *1/24*
U.S. Cl. 252—33 **28 Claims**

Certain compounds containing acid functions are overbased with manganese by carbonating a system containing the acid, a promoter and a copromoter. Among the acids contemplated are tall oil, sulfonic acids and carboxylic acids such as naphthenic acid.

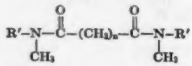
Organic fluid compositions, as those from lubricants and liquid hydrocarbon fuels, containing the overbased products have improved properties. As examples, the products act to improve combustion and as smoke suppressants in residual fuels, and also to provide detergency properties to lubricating oils.

3,827,980
TERTIARY DIAMIDE BASED GREASE

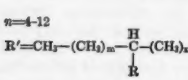
Robert M. Thompson, Wilmington, Del., and Alfred F. Talbot, Wallingford, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Oct. 2, 1972, Ser. No. 293,983
Int. Cl. C10m *7/34*
U.S. Cl. 252—28 **9 Claims**

Novel grease compositions containing major amounts of liquid tertiary diamides having the following structural formula:



wherein



wherein

R=H, alkyl radical having C_1–C_5,
m=2–8,
x=1–5

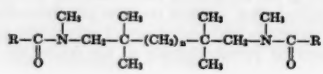
are disclosed. These greases are useful in a high and/or low temperature environment.

3,827,981
TERTIARY DIAMIDE LUBRICANTS

Robert M. Thompson, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Oct. 2, 1972, Ser. No. 293,982
Int. Cl. C10m *3/30*
U.S. Cl 252—51.5 A **9 Claims**

Novel synthetic lubricants containing a major amount of tertiary diamides having the following structural formula:



wherein

n=0–10
R=—$(CH_2)_m$—CH_3

wherein m=4–12

are disclosed. These lubricants have low pour points and positive viscosity indexes.

3,827,982
MOLDABLE LEAD COMPOSITION

William Cornelius Hall, Albany Turnpike, Central Valley, N.Y. 10917, and John Merriam Peterson, Toleman Road, Rock Tavern, N.Y. 12575

No Drawing. Continuation-in-part of abandoned application Ser. No. 406,561, Oct. 26, 1964. This application Dec. 15, 1970, Ser. No. 98,459
Int. Cl. C04b *35/68, 43/00;* E04b *1/74*
U.S. Cl. 252—62 **28 Claims**

Dry lead powder is mixed with water. Substantially all free water is removed from the wet composition to produce a self-supporting lead composition. This composition can be used as a matrix into which aggregates are dispersed.

3,827,983
METHOD AND COMPOSITIONS FOR CLEANING OVENS AND THE LIKE

Harry Ian Mitchell, Rochdale, and Kenneth Tomlinson, Bramhall, England, assignors to Colgate-Palmolive Company, New York, N.Y.

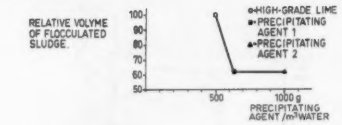
No Drawing. Original application July 30, 1970, Ser. No. 59,753, now Patent No. 3,679,993. Divided and this application June 7, 1972, Ser. No. 260,700
The portion of the term of the patent subsequent to June 27, 1989, has been disclaimed
Int. Cl. C11d *9/12*
U.S. Cl. 252—89 **16 Claims**

A composition for the pre-treatment of surfaces which are subjected to heat and liable to soiling by baked on organic deposits comprising a hydrolyzing amount of an alkali metal bicarbonate, an aqueous vehicle therefor and a surface active agent.

3,827,984
PRECIPITATING AGENT FOR WATER PURIFICATION PROCESSES, AND A METHOD OF PREPARING SAME

Kjell Gunnar Káwe Káwert, Skövde, Sweden, assignor to Aktiebolaget Gullhogens Bruk, Skovde, Sweden

Filed June 1, 1972, Ser. No. 258,613
Int. Cl. B01j *13/00;* C02b *1/16, 5/02*
U.S. Cl. 252—179 **2 Claims**



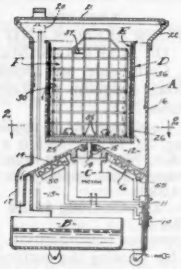
The present invention relates to an agent for purification of water by precipitation, and a method for preparing this precipitating agent. The water shall be purified to such an extent that raw water becomes potable and suitable for cooking and food preparing, and sewage must be cleansed so that it can be released into recipients without causing harm or inconvenience. The substances to be removed are primarily iron, manganese, aluminium and various phosphates, but the water may also contain copper, lead and mercury. The precipitating agent according to the invention comprises a mixture of minerals which after a previous burning have different solubility products, which mixture has a mole ratio of 1.0–5.0 between

basic and acid oxides, and a content of 5–40% SiO_2, 5–15% Al_2O_3, 3–12% Fe_2O_3, 15–70% CaO and 0.1–20% MgO in an ignited sample. In the preparation of the precipitating agent the starting materials are blended in such proportion and burnt at such temperature that sufficient mineral formation is obtained and so that the burnt mixture contains minerals of different solubility products has a mole ratio between basic and acid oxides of 1.0–5.0 and the above mentioned analysis data. The product is subsequently ground to a powder having a fineness of 10–20% by weight greater than 60 μm. and 0–2% by weight greater than 90 μm.

3,827,985
GREASE EXTRACTOR

Michael De Haan, Sherman Oaks, and Lawrence Cohen, Los Angeles, Calif. (both of 1610 Meadows Drive, Portland, Oreg. 97034)

Filed Oct. 16, 1972, Ser. No. 297,744
Int. Cl. B01d *21/26*
U.S. Cl. 210—179 **13 Claims**



A heated centrifuge with removable filtering baskets for the processing of batches of grease laden materials in order to extract said grease therefrom. The centrifuge is motor driven at moderate speeds when used for the intended purpose of removing excess grease from prepared foods, and loose or foreign particles are separated from the grease and which is reclaimed at moderate temperatures while assuring immediate flow and collection within a basin.

3,827,986
TECHNETIUM-99m GENERATORS

John Cecil Charlton and Dermot Lyons, Amersham, England, assignors to The Radiochemical Centre Limited, Amersham, Buckinghamshire, England

No Drawing. Filed Aug. 4, 1972, Ser. No. 278,082
Claims priority, application Great Britain, Aug. 6, 1971, 37,167/71
Int. Cl. C01f *13/00*
U.S. Cl. 252—301.1 R **9 Claims**

Yields of technetium-99m, obtained by elution from generators comprising molybdenum-99 adsorbed on an ion-exchange material, are improved by incorporating a hydrated electron scavenger, particularly nitrate or nitrite ion, at low concentration in the aqueous fluid of the generator and/or in the eluant.

3,827,987
REFORMING PROCESS

Ralph V. Green, Charleston, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

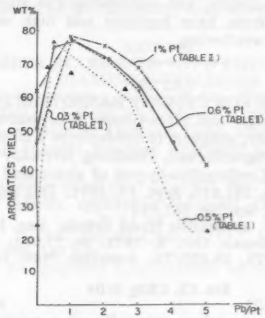
No Drawing. Filed Mar. 24, 1971, Ser. No. 127,845
Int. Cl. C01b *2/00*
U.S. Cl. 252—373 **2 Claims**

In the manufacture of ammonia or hydrogen, natural gas is reformed with steam over a nickel catalyst in the tubes of a reformer to produce hydrogen and carbon monoxide. If hydrogen is added to the steam-natural gas mixture fed to the reformer, catalyst, catalyst tube life, and plant utility will be improved.

3,827,988
Pt-Pb CATALYST COMPOSITIONS

Naoya Kominami, Tokyo, and Toshiyuki Iwaisako and Kusuo Ohki, Saitama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of application Ser. No. 6,948, Jan. 29, 1970. This application Nov. 18, 1971, Ser. No. 200,065
Claims priority, application Japan, Feb. 10, 1969, 44/9,488; Aug. 28, 1969, 44/67,617; Dec. 25 1969, 44/103,817
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 **15 Claims**



Pt-Pb catalyst compositions containing specified amounts of Pt and Pb in specified ratios and prepared by particular impregnation procedures are effective hydroforming catalysts.

3,827,989
IMPREGNATED CHEMICAL SEPARATION PARTICLES

Charles D. Scott, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 13, 1972, Ser. No. 306,062
Int. Cl. C08f *33/08*
U.S. Cl. 260—2.1 E **5 Claims**

Particles, such as ion exchange and selective sorbents useful in chemical separation processes, having a continuous phase throughout the entire particle and an impermeable impregnant in the central portion of the particle, and a method for producing the particle.

3,827,990
IMPREGNATION OF POLYSTYRENE WITH TRICHLOROFLUOROMETHANE

Harold Austin Wright, Murrysville, Pa., assignor to Arco Polymers, Inc., Pittsburgh, Pa.

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,470
Int. Cl. C08j *1/26*
U.S. Cl. 260—2.5 B **5 Claims**

A process has been developed for impregnating polystyrene particles with trichlorofluoromethane (Freon 11) using selected non-ionic surfactants dispersed in the blowing agent rather than in the water phase as is customary. Suitable surfactants are, for example, polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene (23) lauryl ether, polyoxyethylene (20) monolaurate, polyoxyethylene (20) nonylphenol, and mixtures of these with an equal amount of a di-tertiary acetylenic glycol.

3,827,991

COMPOSITION CONTAINING CRYSTALLINE 1,2-POLYBUTADIENE

Noriaki Ando, Yasuyuki Yaeda, and Isao Furuta, Yokkaichi, and Ryuichi Sakata, Kobe, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 12, 1973, Ser. No. 340,128
Claims priority, application Japan, Sept. 11, 1972, 47/90,468
Int. Cl. C08c 9/04; C08f 29/14
U.S. Cl. 260—5 11 Claims

A rubber composition consisting essentially of 3 to 50% by weight of a 1,2-polybutadiene having a 1,2-addition units content of 70% or higher and crystallinity of 5% or higher, and 97 to 50% by weight of at least one conjugated diene-based rubbery polymer selected from the group consisting of styrene-butadiene copolymer rubber, polyisoprene rubber, natural rubber, acrylonitrile-butadiene rubber and polychloroprene rubber. Said rubber composition has an improved green strength, and excellent extrudability, and moldability and vulcanizates obtained therefrom have hardness and high resistance to ozone and weathering.

3,827,992

ADDITIVE FOR CEMENT BASED MORTARS

Alois Aignesberger and Hans-Gunter Rosenbauer, Trostberg, Germany, assignors to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 181,618, Sept. 17, 1971. This application Apr. 4, 1973, Ser. No. 347,894
Claims priority, application Great Britain, Aug. 10, 1971, 37,509/71; Japan, Oct. 5, 1971, 46/77,593; Sweden, Aug. 27, 1971, 10,855/71; Australia, Nov. 16, 1971, 35,746/71
Int. Cl. C08g 9/04
U.S. Cl. 260—21 5 Claims

An additve consisting essentially of a mixture of a sulfonic acid group-containing melamine formaldehyde condensation product and a metal stearate is capable of strengthening and water-proofing cement products.

3,827,993

LIQUID POLYOL COMPOSITIONS

Arthur L. Cunningham, Park Forest, Cyriac C. Poovathunkal, Chicago, and William J. Yapp, Park Forest, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed June 14, 1972, Ser. No. 262,832
Int. Cl. C08g 17/16; C07d 3/64
U.S. Cl. 260—22 EP 14 Claims

This invention is directed to liquid polyols obtained by reacting at least one polyhydroxy compound, e.g. glycol with an epoxidized fatty oil or epoxidized fatty-acid ester, and one or more carboxylic acids or derivatives thereof. The polyols are particularly useful in preparing films, coatings, plastic compositions and the like.

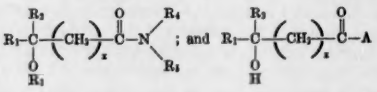
3,827,994

COMPOSITION FOR PRODUCING WRINKLE-FREE PERMANENTLY PRESSED CELLULOSIC TEXTILE MATERIALS

Robert J. Cicione, Cranston, R.I., and Edward G. Najjar, Lincoln, Patricia M. Scanlon, Arlington, John L. Ohlson, Bedford, and Joseph F. Finn, Hyde Park, Mass., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,844
Int. Cl. C08g 51/24
U.S. Cl. 260—29.4 R 15 Claims

A composition useful for imparting abrasion resistance, resistance to frosting, wrinkle resistance, crease retention, wash-and-wear characteristics, durable press characteristics, and permanent press characteristics to cellulosic textile materials and to improve the wet strength, water absorption, and other properties of cellulosic paper. The composition comprises an aqueous aminoplast system admixed with an effective amount of a member of a first group consisting of:



where; (a) x is 0 or 1; (b) R_1 is hydrogen or an alkyl group having about 1–5 carbon atoms; (c) R_2 is hydrogen or an alkyl group having about 1–5 carbon atoms; (d) R_3 is hydrogen, an alkyl group having about 1–5 carbon atoms, or $—SO_3^-$; (e) R_4 is hydrogen, an alkyl group having about 1–8 carbon atoms, $—CH_2CH_2OH$; or $—C_6H_5$; (f) R_5 is hydrogen, an alkyl group having about 1–8 carbon atoms, $—CH_2CH_2OH$; $—C_6H_5$; or $—CH_2OH$; and (g) A is a member selected from a second group consisting of; (i) $—NC_5H_{10}$; (ii) $—NC_4H_8O$; and (iii) $—NC_4H_8$.

3,827,995

COPOLYMER BLENDS AND METHOD OF MAKING SAME

James T. White, Cottondale, and Donald L. Gumprecht, Tuscaloosa, Ala., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Continuation of application Ser. No. 282,939, Aug. 23, 1972, which is a continuation of application Ser. No. 107,583, Jan. 18, 1971, both now abandoned. This application Apr. 25, 1973, Ser. No. 354,383
Int. Cl. C08g 51/24
U.S. Cl. 260—29.4 R 2 Claims

Stable, homogeneous thermosetting, liquid resin compositions useful for treating the surface of felted mineral fiber-board panels which are bonded with a hydrophilic binder to reduce sag and to the method of making the same. Compositions of this invention comprise a copolymer blend of (1) from about 25% to about 55% by weight, of a melamine-formaldehyde copolymer and (2) from about 75% to about 45% by weight of a urea-formaldehyde copolymer. These compositions may be stabilized through the addition of from about 0.05% to about 0.5% by weight of an ammonium hydroxide-sodium hydroxide stabilizer solution. Resin compositions of this invention may be reduced with water and/or compounded with fillers and other materials or they may be used alone.

3,827,996

AQUEOUS DISPERSIONS OF VINYL ESTER POLYMERS

Aleksander Beresniewicz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 850,649, Aug. 15, 1969. This application July 28, 1971, Ser. No. 166,968
Int. Cl. C08f 37/18; C09j 3/12
U.S. Cl. 260—29.6 WB 6 Claims

Aqueous dispersions of vinyl ester polymers having a viscosity index of not greater than about 1.8, and a process for making them, are provided. Films cast from these dispersions possess good water resistance and stability. The dispersions contain as a protective colloid partially hydrolyzed polyvinyl alcohol, derived from polyvinyl acetate, having an average vinyl acetate content of 5 to 7 mole percent and consisting essentially of polyvinyl alcohol molecules essentially none of which contains more than about 16 mole percent vinyl acetate. The polyvinyl alcohol may consist of a blend of two or more polyvinyl alcohols each of which has an average polyvinyl acetate

content different from the average of the blend; however, the average polyvinyl acetate content of any polyvinyl alcohol blended should not exceed about 16 mole percent.

3,827,997

FLAME-RESISTANT COMPOSITIONS OF ETHYLENE/VINYL CHLORIDE INTERPOLYMERS AND HYDRATED ALUMINA

Joseph G. Bergomi, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 146,806, May 25, 1971. This application Mar. 5, 1973, Ser. No. 337,784

Int. Cl. C08f *45/04*

U.S. Cl. 260—29.6 TA **10 Claims**

Flame-resistant compositions comprising ethylene/vinyl chloride interpolymer and finely-divided hydrated alumina.

3,827,998

ANISOTROPIC DOPES OF POLYAMIDES IN CONCENTRATED SULFURIC ACID

Paul Winthrop Morgan, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 27, 1972, Ser. No 301,291

Int. Cl. C08g *51/46*

U.S. Cl. 260—30.8 R **4 Claims**

Novel fiber-forming polyamides consisting essentially of repeating units of the formula:

$$—HN—R_1—NHCO—R_2—CO—$$

wherein R_1 represents a divalent radical selected from the group of 1,4-phenylene; chloro-1,4-phenylene; and *trans*-1,4-cyclohexylene; and R_2 represents a divalent radical selected from the group of chloro-1,4-phenylene; *trans*-1,4-cyclohexylene; and *trans*-1,4-dimethyl - 1,4 - cyclohexylene, with the proviso that when R_1 is *trans*-1,4-cyclohexyl, R_2 is chloro-1,4-phenylene, and that when R_1 is 1,4-phenylene or chloro-1,4-phenylene, R_2 is *trans*-1,4-cyclohexylene or *trans* - 1,4 - dimethyl-1,4-cyclohexylene and anisotropic spinning dopes thereof.

3,827,999

STABLE ELASTOMERIC POLYMER-OIL COMPOSITIONS

Ronald K. Crossland, Manhattan Beach, Calif., assignor to Shell Oil Company

No Drawing. Filed Nov. 9, 1973, Ser. No. 414,489

Int. Cl. C08c *11/22*

U.S. Cl. 260—33.6 AQ **5 Claims**

Stable polymer-oil compositions which have elastic properties and are suitable for casting or other application comprise 2–30% of a selectively hydrogenated block copolymer and 70–98% of an essentially non-aromatic hydrocarbon oil having a boiling point in excess of the melting point of the composition.

3,828,000

ASBESTOS-THICKENED CYCLOALIPHATIC EPOXY MATERIALS FOR USE IN ATMOSPHERES OF ARCED SULFUR HEXAFLUORIDE AND ARTICLES THEREOF

Russell M. Luck, Monroeville, and Gordon C. Gainer, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Continuation of abandoned application Ser. No. 775,499, Nov. 13, 1968. This application Oct. 19, 1971, Ser. No. 190,672

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **22 Claims**

Reliability of power circuit breakers and other equipment containing parts subjected to an environment of arced sulfur hexafluoride is improved by using a cycloaliphatic epoxy resin filled with aluminum trihydrate and thickened with asbestos, preferably highly refined short-fiber Coalinga asbestos.

3,828,001

THIOPHENE DERIVATIVES

David Rex Broad, Chelmsford, Leslie Roy Hatton, Ilford, and Edgar William Parnell, Romford, England, assignors to May & Baker Limited, Dagenham, Essex, England

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,604

Claims priority, application Great Britain, Aug. 14, 1969, 40,712/69

Int. Cl. C07d *63/16*

U.S. Cl. 260—332.2 C **20 Claims**

Thiophene derivatives with a grouping —$COOR_1$ in the 2- or 3-position and a ureido grouping —NHCONH—R_2 in the 3- or 2-position, R_1 representing an alkyl or alkenyl group containing at most 10 carbon atoms or a cycloalkyl group of 5 or 6 carbon atoms, and R_2 representing an alkyl or alkenyl group containing at most 6 carbon atoms, or a cycloalkyl group of 3, 4 or 5 carbon atoms, unsubstituted in the 4- and 5-positions or substituted in the 4-position by a methyl or ethyl group, have been found to possess useful herbicidal activity against weeds.

3,828,002

RUBBER STABILIZED WITH PHENYLENE-DIAMINE-S-TRIAZINES

Hermann Westlinning, Kleinostheim, Werner Schwarze, Frankfurt, and Horst Fleischhauer, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

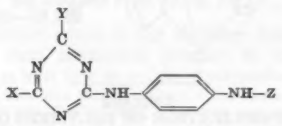
No Drawing. Filed Dec. 19, 1972, Ser. No. 316,565

Claims priority, application Germany, Dec. 27, 1971, P 21 64 800.0

Int. Cl. C08c *11/52*

U.S. Cl. 260—45.8 N **27 Claims**

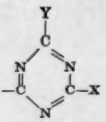
There are prepared 1,3,5-triazines of the formula:



where X and Y are SR_1 where R_1 is alkyl of 1 to 12 carbon atoms or aryl, CN, OR_2 where R_2 is hydrogen, alkyl of 1 to 12 carbon atoms, aryl, allyl or methallyl, phenyl p-phenylenediamino,

where R_3 and R_4 are hydrogen, alkyl of 1 to 18 carbon atoms, alkyl of 1 to 18 carbon atoms substituted with —OH, —CN or OR_5 where R_5 is alkyl of 1 to 18 carbon atoms, allyl, methallyl, cycloalkyl of 5 to 8 carbon atoms, aryl or benzyl, one of R_3 and R_4 is alpha or beta naphthyl and the other is hydrogen, R_3 and R_4 together with the nitrogen atom form a 5 to 8 membered ring which has from 4 to 7 —CH_2— groups of which 0 or 1 hydrogen atom is or of which 2 hydrogen atoms attached to different carbon atoms are substituted by lower alkyl, R_3 and R_4 together with the nitrogen atom form a 5 to 8 membered ring which has from 3 to 6 —CH_2— groups of which 0 or 1 hydrogen atoms is or of which 2 hydrogen atoms attached to different carbon atoms are substituted by lower alkyl and said ring has one hetero oxygen or sulfur atom or NR_6 where R_6 is hydrogen or lower alkyl, or X is chlorine, Z is hydrogen, alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, benzyl, acyl of the formula

where R_7 is alkyl of 1 to 18 carbon atoms, benzyl or phenyl or the group



The compounds are useful to stabilize vulcanized and vulcanizable natural and synthetic rubber compositions.

3,828,003

FLAME RESISTANT POLYMER COMPOSITIONS

Shingo Yamazaki, Daito, Akira Takemura and Kazumi Kojima, Amagasaki, Masato Nishimura, Daito, Teruo Tsuchida, Toyonaka, and Tadashi Yonemoto, Amagasaki, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

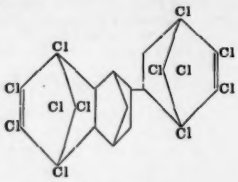
Continuation-in-part of abandoned application Ser. No. 192,033, Oct. 26, 1971. This application Jan. 26, 1973, Ser. No. 326,800

Claims priority, application Japan, Oct. 26, 1970, 45/94,096

Int. Cl. C09k *3/28*

U.S. Cl. 260—45.75 B **4 Claims**

Flame resistant polymer composition which comprises a flammable polymer and an amount effective for flame retarding of a chlorine-containing compound having the following structure:



3,828,004

STABILIZATION OF POLYMERS OF UNSATURATED HYDROCARBONS

Richard J. Dauksys, Bellbrook, Ohio (49 Nuthatch Knob Road, Glastonbury, Conn. 06033)

No Drawing. Filed Apr. 2, 1973, Ser. No. 347,243

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.75 R **7 Claims**

The ultraviolet light stability of polymers of unsaturated hydrocarbons is improved by immersing the polymers in a solution of osmium tetroxide and sodium iodate. After exposure to ultraviolet light, the polymers so treated retain their mechanical properties to a substantial degree, and crazing or cracking of the polymers is virtually eliminated.

3,828,005

TREATMENT OF TEXTILES WITH GLYCIDOL-MODIFIED POLYURETHANES

Allen G. Pittman, 5340 Barrett Ave., El Cerrito, Calif. 94530; William L. Wasley, 1819 Thousand Oaks Blvd. 94707; and Carlton C. Jones, 66 El Cammino Real 94705, both of Berkeley, Calif.

No Drawing. Original application Jan. 14, 1972, Ser. No. 217,963. Divided and this application Apr. 2, 1973, Ser. No. 347,085

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 MA **6 Claims**

Polyurethanes containing isocyanate groups are reacted with glycidol to prepare glycidol-modified polyurethanes useful for application to textile materials to improve their properties, e.g., to impart shrink resistance. Typical example: A polyether polyurethane containing free NCO groups is reacted with glycidol to yield a glycidol-modified polymer which is formed into an emulsion and applied to a textile material. The treated textile may be directly cured or the curing operation may be delayed until the fabric is manufactured into a finished garment.

3,828,006

POLYESTERS PREPARED FROM BISPHENOLS AND ISOPROPYLIDENE BIS(p-PHENYLENEOXY)DIACETYL CHLORIDE

Robert J. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 6, 1973, Ser. No. 385,913

Int. Cl. C08g *17/08*

U.S. Cl. 260—47 C **4 Claims**

Bisphenol and halogenated bisphenol polyesters of bisacid A2 can be molded into hard transparent solid articles. The polyesters are readily made by reacting the bisacid chloride with the bisphenol in an organic solvent solution and in the presence of an HCl scavenger.

3,828,007

PROCESS OF REACTING ISOCYANATE OR ISOTHIOCYANATE AND COMPOSITIONS THEREFOR

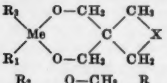
Peter E. Throckmorton and William J. McKillip, Worthington, Ohio, and Robert C. Slagel, Pittsburgh, Pa., assignors to Ashland Oil, Inc., Columbus, Ohio

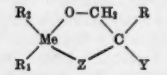
No Drawing. Filed Feb. 18, 1972, Ser. No. 227,618

Int. Cl. C08g *22/00, 22/04*

U.S. Cl. 260—75 NB **18 Claims**

An organic compound containing isocyanate and/or isothiocyanate group is reacted with substance having reactive hydrogen as determined by the Zerewitinoff method in contact with a catalytic amount of organometallic compound having one of the following structural formulas:

(I) 

(II) 

wherein Me is a Group IV–A metal; X is O, S, or CH_2; Y is either NO_2, NH_2, OH, CF_3 or CH_2OH; Z is OCH_2, or is NH, or OCH_2 when Y is CH_2OH; R is an alkyl group; and each R_1 and R_2 individually is alkyl, aryl, cycloalkyl, aralkyl, and alkaryl.

3,828,008

ELECTROCONDUCTIVE HIGH POLYMER COMPOSITION

Isao Shinohara, Eishun Tsuchida, and Katsuhiro Mizoguchi, Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo-to, Japan

No Drawing. Filed July 20, 1972, Ser. No. 273,370

Claims priority, application Japan, July 20, 1971, 46/53,601

Int. Cl. C08f *27/04, 27/08*

U.S. Cl. 260—78.4 N **21 Claims**

A high polymer composition comprising a salt constituted from an integral type of polycation polymer containing, in its principal repeating unit, a quaternized nitrogen and a heterocyclic ring, an anion radical of a tetracyano compound and a neutral tetracyano compound, in an appropriate amount such that the electroconductivity is greater than 10^{-7} ℧ cm.$^{-1}$ is prepared, and is found to possess excellent chemical, physical and electrical properties.

3,828,009

CATIONIC DYEABLE POLYAMIDE OF IMPROVED PHYSICAL PROPERTIES

Robert Alden Lofquist, Richmond, Va., assignor to Allied Chemical Corporation, Morristown, N.J.

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,629

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L **5 Claims**

A cationic-dyeable polyamide, polymerized from ω-aminocarboxylic acids or their lactams, of improved phys-

ical properties can be made by using from 0.30 to 0.85 mole percent (based on the polyamide) of the sodium salt of a diacid such as 5-sulfoisophthalic acid and 0.10 to 0.65 mole percent of an N-sulfoalkyl alkyldiamine such as N-(4 - sulfobutyl)hexamethylenediamine, or N-(2 - sulfoethyl)m - xylylenediamine. A polyamide results containing the respectively same number of sulfo groups, but with less diluent and consequently having a higher melting point. The diacid can be a sulfonate derivative of a phthalic acid, or of fluorene, etc. The diamine can be a sulfonate derivative of hexamethylenediamine, metaxylylenediamine, etc. The use of the combination of additives eliminates the necessity of adding a diamine or dicarboxylic acid to achieve full polymerization.

3,828,010

WATER-DISSIPATABLE POLYESTERAMIDES

Burns Davis, David R. Fagerburg, and Charles J. Kibler, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 4, 1973, Ser. No. 367,029

Int. Cl. C08g *20/30*

U.S. Cl. 260—75 N **9 Claims**

Water-dissipatable polyesteramides derived from monomer components which include at least one aliphatic dicarboxylic acid selected from adipic acid, pimelic acid and suberic acid, at least one diol selected from aliphatic diols containing 2 to 4 carbon atoms and polyethylene glycols, and at least one oxypropyldiamine. These polymers are useful as adhesives, coating materials, films, packaging materials and other products which can be dissolved, dispersed or otherwise dissipated in cold water, hot water or aqueous solutions.

3,828,011

PROCESS FOR PRODUCING ADDITION HOMO- AND CO-POLYMERS FROM EPISULPHIDES

Arnaldo Roggero, Alessandro Mazzei, and Antonio Proni, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

No Drawing. Filed May 24, 1972, Ser. No. 256,291

Claims priority, application Italy, May 24, 1971, 24,897/71

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **14 Claims**

A process is disclosed for producing a new series of addition homo- and co-polymers from monomers such as episulphides, with alkali metal halide catalysts (e.g. LiI) in a polar solvent balanced between donor strength and dielectric constant (e.g. hexamethylphosphoramide) with a catalyst monomer mole ratio ranging from 0.001% to 20% and at a temperature in the range from —20 to 20° C.

3,828,012

METHOD FOR PREPARING RESINS IN POWDER OR GRANULAR FORM FROM AQUEOUS POLYMER LATICES

Peter Joseph Arndt, Jugenheim, Hans-Dieter Blitz, Darmstadt-Arheilgen, Klaus Huebner, Ober-Ramstadt-Eiche, Wilhelm Krall and Hans-Joachim Kurth, Darmstadt, Manfred Mueller, Rossdorf, and Horst Pennewiss, Darmstadt-Neu-Kranichstein, Germany, assignors to Rohm GmbH, Darmstadt, Germany

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,484

Claims priority, application Germany, Oct. 6, 1971, P 21 49 820.4

Int. Cl. C08f *3/64, 15/18*

U.S. Cl. 260—80.73 **8 Claims**

Method of preparing powders or granules of a synthetic organic resin by dispersing an aqueous polymer latex containing the resin in an organic liquid substantially immiscible with water and not dissolving the resin, removing water from the dispersion by distillation, and separating the resin from the remaining organic liquid.

3,828,013

CHEMICAL PROCESS FOR PREPARING ODORLESS TASTE-FREE ACRYLONITRILE/AROMATIC OLEFIN COPOLYMERS

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 17, 1972, Ser. No. 254,113

Claims priority, application Great Britain, May 17, 1971, 15,265/71

Int. Cl. C08f *15/02*

U.S. Cl. 260—85.5 R **6 Claims**

A process is provided for the polymerisation of acrylonitrile and at least one aromatic olefine in which a substantially odourless and taste-free copolymer of acrylonitrile, containing 50 to 95% molar of units derived from acrylonitrile and 50 to 5% molar of units derived from at least one aromatic olefine, is obtained with randomly distributed units of aromatic olefine in a polymerisation mixture containing acrylonitrile and aromatic olefine and at least one alkane thiol of low volatility while adding monomer feed containing aromatic olefine and at least one alkane thiol of high volatility at a rate determined by the rate of polymerisation.

3,828,014

HIGH SHRINKAGE THREADS, YARN AND FIBERS FROM ACRYLONITRILE POLYMERS

Horst Wieden, Alfred Nogaj, and Herbert Marzolph, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Application Apr. 5, 1971, Ser. No. 131,490, now Patent No. 3,739,054, which is a continuation of abandoned application Ser. No. 755,797, Aug. 28, 1968. Divided and this application June 12, 1973, Ser. No. 369,148

Claims priority, application Germany, Sept. 7, 1967, F 53,436

Int. Cl. C08f *3/76, 15/02, 15/22*

U.S. Cl. 260—85.5 R **7 Claims**

This invention relates to high shrinkage threads, yarn and fibers from acrylonitrile polymers or copolymers containing at least 50% by weight of polymerized acrylonitrile and mixtures thereof, wherein the thread or yarn produced by the dry spinning process is exposed to elevated temperatures in the presence of steam and is then stretched and dried. The spun thread or yarn obtained by the dry spinning process may be contacted with saturated steam under pressure.

3,828,015

METHOD FOR PREPARING BRANCHED COPOLYMERS OF ETHYLENE WITH VINYL ORGANOSILICON MONOMERS

Sergei Mikhailovich Samoilov, Simonovsky val 8, kv. 60; Vladimir Ivanovich Ivanov, ulitsa Novatorov 40, korpus 8, kv. 41; Galina Vladimirovna Zambrovskaya, ulitsa Zemlyachki 36, kv. 20; Oleg Nikolaevich Tsvetkov, ulitsa Sakkhalinskaya 6, korpus 1, kv. 256; Viktor Nikolaevich Monastyrsky, ulitsa Vasilievskaya 9, kv. 62; Evgeny Ivanovich Bespalov, ulitsa Kievskaya 20, kv. 15; Boris Vasilievich Gryaznov, Jurievsky pereulok 22, korpus 1, kv. 73; and Boris Vladimirovich Molchanov, Pogonny proezd 3a, kv. 14, all of Moscow, U.S.S.R.

No Drawing. Filed Mar. 5, 1973, Ser. No. 338,223

Claims priority, application U.S.S.R, Mar. 3, 1972, 1756116

Int. Cl. C08f *15/04*

U.S. Cl. 260—88.1 R **15 Claims**

Branched copolymers of ethylene with vinyl organosilicon monomers having the general formula

$$CH_2{=}CHSiR^1_n[OSi(R^2)_3]_{3-n}$$

wherein R^1 is CH_3, R^2 is CH_3, C_2H_5 or phenyl, n is 0 or 1. The copolymers contain units which are expressed by the formulas

$$[-CH_2-CH_2-] \text{ and } \{-CH_2-CHSiR^1_n[OSi(R^2)_3]_{3-n}-\}$$

The copolymers are prepared by copolymerizing a reaction mixture containing ethylene and the above named vinyl organosilicon monomers at a temperature from 50 to 280° C. under a pressure from 100 to 3500 atm. in the presence of initiators of free-radical polymerization.

3,828,016

POLYMERIZATION OF VINYLPYRIDINE IN THE PRESENCE OF SMALL PARTICLES OF ZIEGLER CATALYZED POLYOLEFINS OR POLYSTYRENE

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,304
Int. Cl. C08f 7/12, 15/02
U.S. Cl. 260—88.3 R 4 Claims

Vinylpyridine is polymerized in aqueous suspension in the presence of small solid particles of polyolefin.

3,828,017

PROCESS FOR ISOLATING PROTEINS USING LIQUID FLUOROCARBONS AND LOW DENSITY HYDROCARBON SOLVENTS

John W. Finley and Earl Hautala, Martinez, Calif., and Charles E. Walker, Valley City, N. Dak., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 16, 1973, Ser. No. 342,119
Int. Cl. A23j 1/12, 1/14
U.S. Cl. 260—112 G 7 Claims

Cereal or other protein-containing material is ground and mixed with a liquid fluorocarbon whose density is adjusted to 1.35 to 1.45. The resulting slurry is centrifuged, whereby to produce a protein fraction floating on the surface of the liquid, a bottom phase composed mainly of starch, and an intermediate fluorocarbon phase containing fat. The protein phase can be easily separated from the remainder, dried, and used as a dietary supplement or the like. The starch and fat components can also be readily separated from the centrifuged slurry.

3,828,018

N^{α}-[6 - (CARBOBENZYLOXYAMINO)HEXANOYL]-N^{ϵ} - (SUBSTITUTED CARBOBENZYLOXY) - L-LYSINE COMPOUNDS

Linneaus C. Dorman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,814
Int. Cl. C07c 103/52; C08h 1/00
U.S. Cl. 260—112.5 10 Claims

Dipeptides of 6-(carbobenzyloxyamino)hexanoic acid and N^{ϵ}-(substituted carbobenzyloxy) - L - lysines, useful as bronchial dilators.

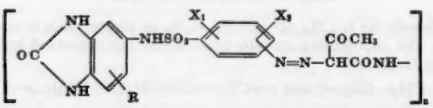
3,828,019

WATER-INSOLUBLE BENZIMIDAZOLONE-(5)-SULFONAMIDOPHENYLENE - AZO - ARYL DYESTUFFS

Peter Junker, Niederhochstadt, Taunus, Joachim Ribka, Offenbach am Main, and Walter Kunstmann, Neuenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,770
Claims priority, application Germany, Sept. 8, 1971, P 21 44 907.0
Int. Cl. C09b 33/16, 29/36
U.S. Cl. 260—157 4 Claims

The present invention relates to novel water-insoluble mono- and disazo dyestuffs of the general formula



wherein X_1 and X_2 may be identical or different and represent a hydrogen atom, a lower alkyl or alkoxy group having preferably 1 to 4 carbon atoms, or a halogen atom, preferably a chlorine or bromine atom, and R is a hydrogen or halogen atom, preferably a chlorine or bromine atom, a methyl, ethyl, methoxy or ethoxy group, n represents the numbers 1 or 2 and A an optionally substituted radical, preferably of the benzene, naphthalene or benzimidazolone series of $n=1$, and of the benzene or diphenyl series if $n=2$.

These dyestuffs may be used for dyeing or printing lacquers, polymers or textile materials. They show a good fastness to light, to weather and to migration. Furthermore, they are fast to heat, have a high tinctorial strength and show in many cases pure shades. They are resistant to the influence of chemical products, especially solvents, acids and alkalis.

3,828,020

ALKOXYALKYLAMINO SALTS OF DISAZO ACID DYES

Arnold Tartter, Lambsheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,341
Claims priority, application Germany, Aug. 27, 1971, P 21 42 939.0
Int. Cl. C09b 31/06
U.S. Cl. 260—191 4 Claims

Sulfonic acid group-containing disazo coupling products of aminoazobenzenes and β-naphtholsulfonic acids in the form of their salts with aliphatic amines containing ether linkages. The salts are useful for coloring printing inks and particularly for coloring polypropylene.

3,828,021

GENTAMICIN C_1 DERIVATIVES

Thomas R. Beattie, North Plainfield, William V. Ruyle, Scotch Plains, Tsung-Ying Shen and Gordon L. Walford, Westfield, and Edward Walton, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 14, 1972, Ser. No. 262,821
Int. Cl. C07c 129/18
U.S. Cl. 260—210 AB 20 Claims

New aminoglycoside antibiotics of the gentamicin family are described, having different functional groups on the C–2 position of the garosamine moiety. The compounds exhibit antibacterial activity against both gram-positive and gram-negative infections.

3,828,022

10,11-ANHYDROERYTHROMYCINS

John Soloman Tadanier, Chicago, and Jerry Roy Martin, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed June 15, 1972, Ser. No. 263,051
Int. Cl. C07c 129/18
U.S. Cl. 260—210 E 6 Claims

Covers 10,11-anhydroerythromycins which are useful as antibiotics.

3,828,023

PROCESS FOR PREPARING CYCLIC OLIGOMERS OF N-SUBSTITUTED AZIRIDINES

Sally P. Cornier, Sanford, and Charles E. Wymore, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,235
Int. Cl. C07d 53/00
U.S. Cl. 260—239 BC 9 Claims

Cyclic oligomers of N-alkylaziridines and N-aralkylaziridines are prepared by contacting the N-substituted aziridine monomer with an alkylaluminum catalyst at a

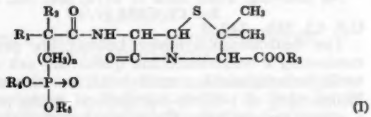
temperature sufficient to cause reaction. For example, the cyclic tetramer of N-ethylaziridine was prepared in high yields by contacting N-ethylaziridine with triisobutylaluminum at 140°–150° C. for 20 hours under autogenous pressure.

3,828,024
POLY(AZIRIDINE)S
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 100,509, Dec. 21, 1970. This application June 29, 1972, Ser. No. 267,326
Int. Cl. C07d *23/06*
U.S. Cl. 260—239 E **5 Claims**

The bis(aziridinyl) compounds containing electron withdrawing groups in the aziridinyl rings are described. Typical electron withdrawing groups are carboalkoxy, aroyl, cyano, aryl, and substituted aryl groups. These compounds are useful as cross-linking agents for polymers containing ethylenic unsaturation.

3,828,025
PHOSPHONO SUBSTITUTED ACYLPENICILLINS
Ernest S. Hamanaka, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Filed Nov. 4, 1970, Ser. No. 87,018
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **11 Claims**

Broad spectrum antibacterial agents; namely, α-(phosphonoalkyl) and α-(ω-phosphonocycloalkyl)penicillins of the formula



(I)

and the non-toxic cationic salts thereof wherein

R_1 is hydrogen, lower alkyl, phenyl and substituted phenyl wherein the substituent is lower alkyl, lower alkoxy, chloro, bromo, fluoro and trifluoromethyl;

R_2 is hydrogen;

R_1 and R_2 together with the carbon atom to which they are attached are alicyclic of from 3 to 7 carbon atoms;

R_3 is hydrogen and acyloxy lower alkyl wherein the acyloxy moiety is lower alkanoyloxy, benzoyloxy and substituted benzoyloxy wherein the substituent is chloro, bromo, fluoro, lower alkyl, lower alkoxy and trifluoromethyl;

n is 0 or an integer from 1 to 8;

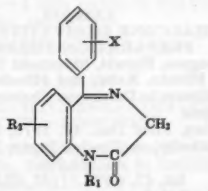
each of R_4 and R_5 is hydrogen, lower alkyl, substituted lower alkyl wherein the substituent is lower alkoxy and fluoro; phenyl and substituted phenyl wherein the substituent is chloro, bromo, fluoro, lower alkyl, lower alkoxy and trifluoromethyl.

3,828,026
PROCESS FOR THE TEMPORARY PROTECTION OF CARBOXYL GROUPS
Robert Burns Woodward, 12 Oxford St., Cambridge, Mass. 02138
No Drawing. Continuation of application Ser. No. 856,457, Sept. 9, 1969, which is a continuation-in-part of application Ser. No. 573,800, Aug. 22, 1966, both now abandoned. This application June 1, 1972, Ser. No. 258,616
Claims priority, application Switzerland, Sept. 10, 1965, 12,623/65; Dec. 9, 1965, 16,970/65, 16,974/65, 16,976/65, 16,979/65, 16,980/65, 16,981/65
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—239.1 **6 Claims**

The present invention concerns the temporary protection of a carboxyl group by esterifying the corresponding carboxylic acid with a 2,2,2-trihalogenoethanol, particularly 2,2,2-trichloroethanol, and subsequently splitting the ester grouping by treatment with a chemical reducing agent.

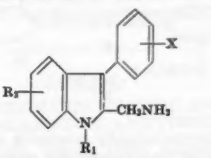
3,828,027
PROCESS FOR PREPARING BENZODIAZEPINE DERIVATIVES
Hisao Yamamoto and Shigeho Inaba, Nishinomiya-shi, Tadashi Okamoto, Ashiya-shi, Toshiyuki Hirohashi, Kobe, Kikuo Ishizumi, Minoo-shi, Michihiro Yamamoto, Takarazuka-shi, Isamu Maruyama, Minoo-shi, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Sept. 16, 1968, Ser. No. 762,341
Claims priority, application Japan, Sept. 22, 1967, 42/60,952; Sept. 27, 1967, 42/62,424, 42/62,425, 42/62,426, 42/62,427, 42/62,428, 42/62,429, 42/62,630; Oct. 9, 1967, 42/65,102, 42/65,104; Oct. 18, 1967, 42/67,354; Nov. 2, 1967, 42/70,794, 42/70,796, 42/70,798; Nov. 6, 1967, 42/71,598; Nov. 8, 1967, 42/72,078; Dec. 9, 1967, 42/79,166; Dec. 15, 1967, 42/80,514; Dec. 21, 1967, 42/82,273; Jan. 10, 1968, 43/1,501
The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **5 Claims**

The process for producing benzodiazepine derivatives useful for tranquilizer,



wherein R_1 is hydrogen, C_1–C_3 alkyl group or C_4–C_7 cyclohexylmethyl group and R_2 is hydrogen or halogens and X is halogens.

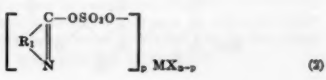
2-Amino-methylindole derivatives or their salts



wherein R_1, R_2 and X respectively have the same meanings as above is allowed to react with an appropriate oxidizing agent, such as for example, chromium trioxide.

3,828,028
PROCESS FOR PREPARING LACTAM COMPLEXES
Mitsuo Masaki, Chiba, and Kiyoshi Fikui, Jyun'ichiro Kita, and Izuhiko Uchida, Ichihara, Japan, assignors to Ube Industries Ltd., Yamaguchi-ken, Japan
No Drawing. Filed Apr. 24, 1972, Ser. No. 247,009
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 R **6 Claims**

An improved process for producing a lactam complex which may be readily converted to a corresponding lactam from an alicyclic ketoxime complex by reacting said ketoxime complex with a lactime-O-sulfonic acid metal compound, as a rearrangement reagent, of the following formula (2)



(2)

wherein R_1 is an alkylene group or substituted alkylene group having 3 to 11 carbon atoms in the main chain, M is a metal atom selected from metals of groups II*b*, III*a*, IV and V*a* of the periodic table, X is a halogen atom, *n* is the maximum valency of M and is a positive integer of 2 to 5, and *p* is equal to *n* or a positive integer smaller than *n*.

3,828,029

SYNTHESIS OF 14β HYDROXYSTEROIDS

Eliahu Caspi, 1 Ardmore Road, Worcester, Mass. 01609, and Donald J. Aberhart, 1005 Perry St. NE., Washington, D.C. 20017

No Drawing. Continuation-in-part of abandoned application Ser. No. 262,395, June 13, 1972. This application Apr. 3, 1973, Ser. No. 347,597

Int. Cl. C07c *173/00*

U.S Cl. 260—239.55 R **14 Claims**

There is provided a novel method of inserting a 14β-hydroxy group into steroid nuclei unsubstituted at that position and in particular there is provided a method of converting 3,22-dihydroxy-23,24-dinor-5ζ-cholenes or the 3-acylates thereof into the corresponding 3, 14β,22-trihydroxy-23,24-dinor-5ζ-cholanes and the 3,22-diacylates thereof. This method also provides a novel and simple means of synthesizing digitoxigenin.

3,828,030

CHALCONE DERIVATIVES AND PREPARATION THEREOF

Hiroaki Kinugasa, Ibaraki, Masatoshi Tsukamoto, Kyoto, Hiroyuki Mizuta, Kobe, and Hitoshi Uno, Takatsuki, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

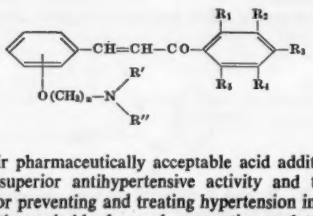
No Drawing. Filed Dec. 10, 1970, Ser. No. 97,028

Claims priority, application Japan, Dec. 17, 1969, 44/101,906

Int. Cl. C07d *51/72, 87/32*

U.S. Cl. 260—240 J **15 Claims**

ω-Aminoalkoxychalcones of the following general formula:



and their pharmaceutically acceptable acid addition salts having superior antihypertensive activity and therefore useful for preventing and treating hypertension in human, composition suitable for such prevention and treatment and methods for the preparation of the said ω-aminoalkoxychalcones.

3,828,031

ETHERS

Friedrich Karrer, Basel, Switzerland, assignor to Ciba-Geigy AG., Basel, Switzerland

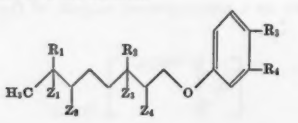
No Drawing. Filed Oct. 18, 1971, Ser. No. 190,305

Claims priority, application Switzerland, Oct. 20, 1970, 15,436/70

Int. Cl. C07d *1/00*

U.S. Cl. 260—240 H **3 Claims**

Compounds of the formula



wherein Z_1 and Z_2 are together a carbon carbon bond or together an oxygen bridge or each hydrogen, R_1 and R_2 are each methyl, or ethyl, Z_3 and Z_4 together are a carbon carbon bond, R_3 is hydrogen, C_2–C_5 alkylcarbonyl, carbamoyl, C_1–C_4 monoalkyl-, C_2–C_4 alkenyl-, C_2–C_4 alkinyl- or arylcarbamoyl, R_4 is C_2–C_5 alkylcarbonyl, carbamoyl, C_1–C_4 monoalkyl-, C_2–C_4 alkenyl-, C_2–C_4 alkinyl- or arylcarbamoyl or R_3 is C_2–C_5 alkylcarbonyl, carbamoyl, C_1–C_4 monoalkyl-, C_2–C_4 alkenyl-, C_2–C_4 alkinyl- or arylcarbamoyl, R_4 is hydrogen, C_2–C_5 alkylcarbonyl, carbamoyl, C_1–C_4 monoalkyl-, C_2–C_4 alkenyl-, C_2–C_4 alkinyl- or arylcarbamoyl or Z_3 and Z_4 are each hydrogen and R_3 and R_4 are each hydrogen, C_2–C_5 alkylcarbonyl, carbamoyl, C_1–C_4 monoalkyl-, C_2–C_4 alkenyl-, C_2–C_4 alkinyl- or arylcarbamoyl.

Compounds according to the above formula wherein Z_1 and Z_2 are together a carbon carbon bond or an oxygen bridge, R_1 and R_2 are each methyl or ethyl, Z_3 and Z_4 are together a carbon carbon bridge, R_3 is acetyl, propionyl, butyryl, carbamoyl, monomethylcarbamoyl, monoethylcarbamoyl or monophenylcarbamoyl and R_4 is hydrogen, are useful for combating pests especially insects, representations of the order Acarina or nematodes.

3,828,032

PROCESS FOR PREPARING 3-ALKYL-2-BENZOTHIAZOLINYLIDENE KETONES

Richard S. Henion, Brockport, and Cataldo A. Maggiulli, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 9, 1971, Ser. No. 151,513

Int. Cl. C07d *91/44*

U.S. Cl. 260—240 R **9 Claims**

The benzothiazolinylidene ketones are prepared by condensing a benzothiazolium quaternary salt such as 3-methylbenzothiazolium methyl sulfate with an α-haloketone such as 1-chloro-2-propanone in the presence of a strong organic base. Generally, higher yields are obtained compared to the prior use of acid halides instead of α-haloketones in the reaction.

3,828,033

PROCESS FOR PREPARING 2-(6-METHOXY-2-NAPHTHYL)PROPIONIC ACID AND INTERMEDIATES THEREFOR

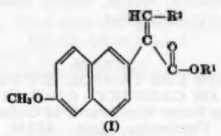
Peter H. Nelson, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Original application Sept. 30, 1969, Ser. No. 862,500, now Patent No. 3,681,432, dated Aug. 1, 1972. Divided and this application Mar. 30, 1972, Ser. No. 239,828

Int. Cl. C09b *23/00;* **C07c** *69/76*

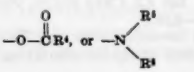
U.S. Cl. 260—240 R **5 Claims**

2-(6-Methoxy-2-naphthyl)propionic acid is prepared by reacting a compound having the formula



(I)

with hydrogen in the presence of a hydrogenation catalyst until a 2-(6-methoxy-2-naphthyl)propionate is formed, and hydrolyzing the ester group of the propionate. In the formula, R^1 is an alkyl, cycloalkyl, aralkyl or alkenyl group and R^2 is $—OR^3$, $—SR^3$,



wherein R^3, R^5 and R^6 each is alkyl or cycloalkyl; R^4 is alkyl, cycloalkyl, aryl or aralkyl; and R^5 and R^6 together can be ethylene or a polymethylene group having from 3 to 7 carbons. The product has anti-inflammatory, analgesic, and anti-pyretic activities.

3,828,034

TRICYCLIC PHARMACOLOGICAL AGENTS, INTERMEDIATES AND METHODS OF MAKING

Michael Marx, Sunnyvale, and John A. Edwards, Los Altos, Calif., assignors to Syntex (U.S.A.) Inc.

No Drawing. Filed May 25, 1972, Ser. No. 256,751

Int. Cl. C07c *87/02*; C09b *23/00*

U.S. Cl. 260—240 TC **34 Claims**

5-(3-Substituted-prop - 1 - enylidene)- and 5-(3-substituted-prop-1-ynyl)- derivatives of 5H-dibenzo[a,d]cycloheptenes and 10,11-dihydro - 5H - dibenzo[a,d]cycloheptenes and methods of making. The process of preparing the 5-(3'-substituted-prop-1-enylidene)- derivatives comprises reaction of the appropriate 5-(3-substituted-prop-1-ynyl)- derivative with a suitable base. The 5-(3-amino substituted - prop-1-enylidene)- derivatives exhibit antihistamine activity and are further useful in the treatment of, and/or palliation of, abnormal conditions, occurring in mammals, related to the central nervous system. The remaining compounds have utility as intermediates for pharmacologically active compounds.

3,828,035

PRODUCTION OF OXAZINE DYES WITH ARYLAMINO GROUPS

Hans Baumann and Udo Mayer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,678

Int. Cl. C09b *19/00*

U.S. Cl. 260—242 **5 Claims**

Phenylamino-substituted oxazine dyes which are eminently suitable for dyeing anionically modified fibers brilliant blue shades of very good fastness properties.

3,828,036

BIS-QUATERNARY CYCLIC THIAZINES

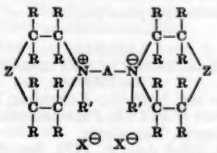
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed Feb. 26, 1971, Ser. No. 119,384

Int. Cl. C07d *93/10*

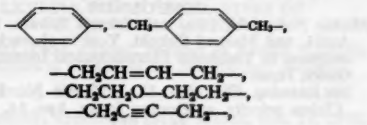
U.S. Cl. 260—243 B **5 Claims**

Bis-quaternary cyclic thiazines as illustrated by the formula



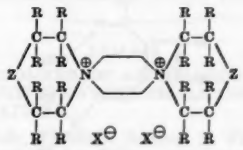
where the R's are hydrogen or a substituted group such as a hydrocarbon group, i.e., alkyl, etc., and Z is S, S→O, O←S→O and X is an anion.

These compositions may be linear such as where A is alkylene, alkenylene, alkynylene, arylene, alkarylenealkyl, oxyalkylene, for example as $-(CH_2)_n$ or branched alkylene,



polyalkylene oxide such as —A—$(OA)_n$— for example where A is alkylene derived from ethylene, propylene, butylene, etc., oxides —$CH_2CH_3(O—CH_2CH_2)_n$—, etc., and R' is alkyl, hydroxyalkyl, aryl, cycloalkyl, aralkyl, etc.

In addition, both A and R"s may be part of a cyclic structure, for example



These compositions are prepared by reacting 1 mole of a di-secondary amine salt with 2 moles of a divinyl sulfur compound.

The products have a wide variety of uses including their use as microbiocides, etc.

3,828,037

TRIFLUOROMETHYLMERCAPTOACETAMIDO-CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed July 20, 1972, Ser. No. 273,571

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **7 Claims**

This invention is directed to antibacterial compounds, in particular, to 7 - trifluoromethylmercaptoacetamido-cephalosporins.

3,828,038

METHOD FOR PRODUCING ISATOIC ANHYDRIDE AND 3-AZAISATOIC ANHYDRIDE

Lubomir C. Vacek, Toledo, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Application Nov. 3, 1971, Ser. No. 195,449, now Patent No. 3,734,921, which is a continuation-in-part of abandoned application Ser. No. 840,508, July 9, 1969. Divided and this application Mar. 9, 1973, Ser. No. 339,529

Int. Cl. C07d *39/00*

U.S. Cl. 260—244 A **6 Claims**

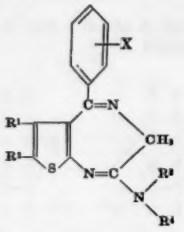
Method for producing isatoic anhydride and 3-azaisatoic anhydride which involves reacting, in an aqueous medium, an alkali or alkaline earth metal base and certain N-halophthalimides or N-haloquinolinimides at temperatures ranging from about 25° [1] down to the freezing point of the reaction mixture for a time sufficient to enable acidification of the reaction mixture to a pH in the range of about 5.5 to 7.0 within the aforedescribed temperature range without causing souring. After acidification, the reaction mixture is heated to a temperature where exothermic reaction begins and reaction is allowed to proceed while the pH of the reaction mixture is maintained in the range of about 5.5 to 7 until reaction is complete.

3,828,039
2-AMINO-THIENO[2,3-e][1,4]DIAZEPINE COMPOUNDS

Michio Nakanishi, Oita, and Tetsuya Tahara, Kazuhiko Araki, and Masami Shiroki, Yoshitomi-machi, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,435
Claims priority, application Japan, Apr. 14, 1971, 46/24,013
Int. Cl. A61k *27/00;* **C07d** *63/12, 63/14*
U.S. Cl. 260—247.1 **16 Claims**

2-amino-thieno[2,3-e][1,4]diazepine compounds of the general formula:



wherein X is H, halogen, methyl, methoxy or trifluoromethyl; each of R^1 and R^2 is H or C_{1-4} alkyl, or R^1 and R^2 combinedly form $—(CH_2)_4—$; and $—N(R^3)(R^4)$ is amino, alkyl- or dialkyl-amino (alkyl being C_{1-4} alkyl), 1-pyrrolidinyl, piperidino, morpholino or 4-methyl-1-piperazinyl; and pharmaceutically acceptable acid addition salts thereof, are useful as psychotropics.

3,828,040
ANTHRAQUINONE REACTIVE DYESTUFFS

Hans-Samuel Bien, Burscheid, Wolfgang Harms, Leverkusen, Reinold Schmitz, Blecher, and Heinrich Leister, Cologne-Stammheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 684,931, Nov. 22, 1967. This application July 17, 1970, Ser. No. 64,007
Claims priority, application Germany, Nov. 30, 1966, F 50,802
Int. Cl. C07d *51/36, 55/48*
U.S. Cl. 260—249 **6 Claims**

Anthraquinone reactive dyestuffs consisting of 1,4,5-triamino anthraquinones wherein the 1 and 4 - amino groups are substituted by sulfoarylene, sulfoaralkylene or sulfatoalkylene radicals and the 5-amino group is substituted by a reactive group. The dyestuffs are especially suitable for use in dyeing hydroxyl or nitrogen containing textile materials, especially natural and regenerated cellulose, wool, silk, synthetic polyamide and polyurethane fibers thereby yielding dyeings of excellent fastness properties.

3,828,041
6-SUBSTITUTED 3-NITROIMIDAZO[1,2-b]PYRIDAZINES AND METHOD OF PREPARING SAME

Andrew Stephen Tomcufcik, Old Tappan, N.J., and Patrick Thomas Izzo and Paul Frank Fabio, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 118,508, Feb. 24, 1971, and Ser. No. 118,510, Feb. 24, 1971. This application Sept. 28, 1972, Ser. No. 293,234
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 AC **10 Claims**

The preparation of 6-substituted oxo, thio or amino-3-nitroimidazo[1,2-b]pyridazines which may have a substituent in the 2-position are described. One method is the nitration in the 3-position of the substitued imidazo [1,2-b]pyridazine to give the desired product. Other methods are described. The compounds are useful for their anti-protozoal activity particularly as anti-amebic and anti-trichomonal agents.

3,828,042
PRODUCTION OF 3-SUBSTITUTED- AND 1,3-DISUBSTITUTED - 2,4(1H,3H) - QUINAZOLINEDIONES, AND THE 2,4 THIO AND DITHIO ANALOGUES THEREOF

George F. Schlaudecker, Toledo, and Richard L. Jacobs, Perrysburg, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Continuation of application Ser. No. 656,691, July 28, 1967, which is a continuation-in-part of application Ser. No. 554,354, June 1, 1966, which in turn is a continuation-in-part of application Ser. No. 464,190, June 15, 1965, all now abandoned. This application Sept. 12, 1969, Ser. No. 860,159
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 QA **14 Claims**

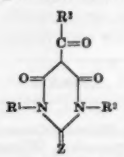
An improved method for the production of 3-substituted- and 1,3-disubstituted - 2,4(1H,3H) - quinazolinediones and the 2,4 thio and dithio analogous[1] thereof which involves the steps of mixing (in the absence of an HCl absorber) phosgene or thiophosgene with certain *o*-amino-N-substituted benzamides, *o*-amino-N-substituted thiobenzamides, *o*-substituted amino-N-substituted benzamides or *o*-substituted amino-N-substituted thiobenzamides, and heating the resulting reaction mixture to a temperature sufficiently high to cause evolution of HCl, but sufficiently low that decomposition does not occur.

3,828,043
5-ACYL BARBITURIC ACID DERIVATIVES

Ian Trevor Kay, Finchampstead, Frederick Charles Peacock, Ascot, and Wilson Shaw Waring, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 22, 1971, Ser. No. 155,645
Claims priority, application Great Britain, July 2, 1970, 32,098/70
Int. Cl. C07d *51/20*
U.S. Cl. 260—257 **5 Claims**

A compound having the formula:



wherein R^1 and R^2 represent hydrogen, alkyl of up to 6 carbon atoms, allyl, cyclohexyl, phenyl, benzyl, phenylallyl or furyl-allyl, R^3 represents alkyl of up to 6 carbon atoms, allyl, cyclohexyl, phenyl, benzyl, phenylallyl or furyl-allyl, and Z represents an oxygen or sulphur atom provided that Z is sulphur when both R^1 and R^2 are hydrogen, methyl or ethyl and R^3 is methyl. The compounds are useful in combatting plant pests.

3,828,044
5-(3,4,5-TRIMETHOXYBENZYL)-BARBITURIC ACIDS

Berislav Gluncic and Nedjeljko Kujundzic, Zagreb, Yugoslavia, assignors to PLIVA, Pharmaceutical and Chemical Works, Zagreb, Yugoslavia

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,435
Claims priority, application Yugoslavia, Feb. 5, 1971, 263/71
Int. Cl. C07d *51/20*
U.S. Cl. 260—257 **3 Claims**

The invention disclosed provides 5-(3,4,5-Trimethoxybenzyl)-barbituric acid, substituted derivatives thereof and a process for their preparation.

3,828,045

DIGLYCIDYL ETHERS OF FIVE AND SIX MEMBERED N-HETEROCYCLIC COMPOUNDS

Hans Batzer, Arlesheim, Juergen Habermeier, Allschwil, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 26, 1971, Ser. No. 109,953

Claims priority, application Switzerland, Jan. 30, 1970, 1,347/70

The portion of the term of the patent subsequent to Dec. 21, 1988, has been disclaimed

Int. Cl. C07d *51/30, 49/32*

U.S. Cl. 260—260 5 Claims

New diglycidyl ethers of mononuclear, five-membered or six-membered, unsubstituted or substituted N-heterocyclic compounds with two NH groups in the molecule, containing butene oxide as an adduct, produced by reaction of mononuclear, five-membered or six-membered, unsubstituted or substituted N-heterocyclic compounds, for example hydantoin, barbituric acid, uracil, dihydrouracil, parabanic acid and the corresponding derivatives, with butene oxide, for example 1,2-butene oxide, to give monoalcohols or dialcohols, and subsequent glycidylation of the OH groups or of the OH group and the NH group to give the corresponding glycidyl ethers.

3,828,046

[4-(5,10 - DIHYDRO-4H-BENZO[5,6]CYCLOHEPTA [1,2-b]THIEN-4-YL) - 1-PIPERAZINYL-ALKYL]-3-ALKYL-2-IMIDAZOLIDINONES

Guenther Doerhoefer, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 8, 1972, Ser. No. 260,877

Claims priority, application Switzerland, June 17, 1971, 8,822/71

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR 23 Claims

Compounds of the class of [4-(5,10-dihydro-4H-benzo[5,6]cyclohepta[1,2-b]thien - 4 - yl) - 1-piperazinylalkyl]-3-alkyl-2-imidazolidinones, their 5-methyl substituted and their 7-chloro- or 8-chloro-substituted derivatives as well as their pharmaceutically acceptable acid addition salts exhibit pharmacological activities directed to the central nervous system as it is shown by standard pharmacological test methods on animals. The results obtained render these compounds suitable for use as sedatives, hypnotics and tranquilizers for the treatment of sleep disturbances and states of tension and agitation.

3,828,047

PHENOXYETHYL N-PHENYL-N-PHENOXYETHYL-PIPERAZINYLETHYLCARBAMATE

Franklin W. Abbate, North Haven, and William J. Farrissey, Jr., Northford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Mar. 2, 1970, Ser. No. 15,925, now Patent No. 3,719,680, dated Mar. 6, 1973. Divided and this application Dec. 13, 1972, Ser. No. 314,610

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R 1 Claim

Phenoxyethyl N - phenyl-N-phenoxyethylpiperazinylethylcarbamate is prepared in good yield by reacting at an elevated temperature an appropriate N-hydrocarbylcarbamate with triethylenediamine or an N-hydrocarbylcarbamate, triethylenediamine. The N-piperazinyl derivative so-formed is useful as catalysts in the manufacture of polyurethanes, in the preparation of acid-soluble and acid-dyeable polyurethanes.

3,828,048

ALKYLSULFONIC DERIVATIVES OF QUININE ALKALOIDS

Rene Tixier, Paris, France, assignor to Societe Generale de Reserches et d'Applications Scientifiques (Sogeras)

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,106

Claims priority, application Great Britain, Oct. 14, 1970, 48,926/70

Int. Cl. C07d *43/24*

U.S. Cl. 260—284 3 Claims

Quinine alkaloids such as quinine, quinidine, hydroquinidine and quinicine are reacted with an alkane sultone, such as propane sultone or butane sultone, to form an internal sulfonate which has more acceptable pharmacological properties, especially a reduced toxicity.

3,828,049

DIASTEREOMERS OF α-HYDRAZINO - β-(3,4-DISUBSTITUTED PHENYL)ALKANOIC ACID DERIVATIVES

Sandor Karady, Elizabeth, Seemon H. Pines, Murray Hill, Manuel G. Ly, Edison, and Meyer Sletzinger, North Plainfield, N.J., assignors to Merck & Co. Inc., Rahway, N.J.

No Drawing. Original application June 24, 1970, Ser. No. 49,542, now Patent No. 3,718,674. Divided and this application Nov. 15, 1971, Ser. No. 199,061

Int. Cl. C07d *43/32*

U.S. Cl. 260—284 4 Claims

Diastereomers of and a method of resolving α-hydrazino-β-(substituted or unsubstituted phenyl)alkanoic acid derivatives.

3,828,050

3-ALKOXY-14-ACYLOXYDIHYDROMORPHINONE DERIVATIVES

William Roger Buckett, Lanark, Scotland, and Hans Harold Bosman, Epe, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

No Drawing. Continuation-in-part of abandoned application Ser. No. 35,881, May 8, 1970. This application Aug. 7, 1972, Ser. No. 278,240

Claims priority, application Great Britain, May 16, 1969, 25,025/69

Int. Cl. C07d *43/28*

U.S. Cl. 260—285 4 Claims

The invention relates to novel 3-alkoxy, 14-valeryloxy or caproyloxy-dihydronormorphinone derivatives, which at the nitrogen atom are substituted with a cyclopropylmethyl or cyclobutylmethyl radical, and their acid addition salts; these compounds show very useful properties in that they exert a surprisingly improved analgesic activity besides tranquillizing, cough suppressing and anticonvulsant properties, without inducing depressing respiration.

3,828,051

PROCESS FOR PRODUCING PYRIDINE BASES

Yasuo Kusunoki and Hiroshi Okasaki, Kitakyushu, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,009

Int. Cl. C07d *31/08*

U.S. Cl. 260—290 P 15 Claims

The process claimed is directed to the production of pyridine bases, especially MEP, wherein the content of

α-picoline and, if desired, β-picoline are greatly increased. To increase the α-picoline content, paraldehyde is reacted in an ammoniacal alkaline environment, in the presence or absence of oxygen, with NH_3 and a copper compound. If also β-picoline is desired, a trioxane is added to the reaction. The reactivity of the copper is maintained substantially unabated if the reaction is carried out in the presence of oxygen or an oxygenous gas. Optimum production of α-picoline is achieved by using copper acetate and either methanol or ethanol. Paraldehyde may be used as an extracting solvent to improve the process. Typical operational parameters are 150–280° C. and 20–150 kg./cm.² pressure in the liquid phase.

3,828,052

ACYL HYDRAZONES OF 2,2,6,6-TETRAMETHYL-PIPERIDINE-4-ONES

Brian Holt, Royton, Donald Richard Randell, Stockport, and James Jack, Bramhall, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,181

Int. Cl. C07d *29/30*

U.S. Cl. 260—293.62 **25 Claims**

Acyl hydrazone derivatives of 2,2,6,6-tetramethylpiperidine-4-one are stabilizers of organic materials. They are prepared by reacting a corresponding acid hydrazide with triar .onamine.

3,828,053

LOWER-ALKYL-β-OXO-4-PIPERIDINE-N-BENZOYLPROPIONATES

Felix E. Granchelli, Arlington, Mass., assignor to Beecham Group Limited, Brentford, England

No Drawing. Continuation of abandoned application Ser. No. 873,080, Oct. 31, 1969. This application Aug. 17, 1971, Ser. No. 172,582

Int. Cl. C07d *29/24*

U.S. Cl. 260—293.77 **2 Claims**

Benzopyran-5-ols having anti-depressant and analgesic properties are prepared from corresponding coumarin intermediates via the new β-keto ester ethyl-β-oxo-4-piperidine-N-benzoylpropionate obtained from N-benzoyl-isonipecotinyl tert. butyl ethyl malonate. The benzopyran-5-ols can be hydrogenated to the corresponding pyran ring-saturated dihydro-pyrans lacking the double bond in the 3–4 position.

3,828,054

N-ACYL AND N-PYRIDYLCARBONYL OR SULFONYL MONO- OR DI-SUBSTITUTED SULFAMOYLBENZENESULFONAMIDES

James M. Sprague, Gwynedd Valley, and Carl Ziegler, Glenside, Pa., assignors to Merck & Co. Inc., Rahway, N.J.

No Drawing. Original application Sept. 26, 1969, Ser. No. 870,380, now Patent No. 3,709,917, dated Jan. 9, 1973. Divided and this application Oct. 4, 1972, Ser. No. 295,075

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 F **4 Claims**

N-Acyl and N-organosulfonyl mono-substituted or di-substituted sulfamoylbenzenesulfonamides and salts thereof wherein the benzene ring may be substituted by halo, alkyl, trihalo lower alkyl, nitro, cyano, carboxy or a hydrocarbylene moiety. The products are prepared by either of two routes: (1) by treating a mono- or di-substituted sulfamoylbenzenesulfonamide with an acyl halide (or organosulfonyl halide) or with a carboxylic acid anhydride (or organosulfonic acid anhydride), or (2) by treating a mono- or di-substituted sulfamoylbenzenesulfonyl halide with a salt of a acyl (or organosulfonyl)amide. The products are useful in the treatment of gout and gouty arthritis.

3,828,055

HETEROCYCLIC AMIDES OF 4-HYDROXY-2H-1-BENZOTHIOPYRAN - 3 - CARBOXYLIC ACID 1,1-DIOXIDE

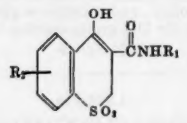
Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 248,509, Apr. 28, 1972, now Patent No. 3,769,292, dated Oct. 30, 1973. This application Feb. 20, 1973, Ser. No. 333,842

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **6 Claims**

Compounds of the formula:



I

wherein R_1 is an aromatic heterocyclic group and R_2 is hydrogen, alkyl, aralkyl, alkoxy, halogen, cyano, nitro, trifluoromethyl, etc., are disclosed. These compounds are useful as antiinflammatory agents.

3,828,056

[2-(2-METHYL-5-NITRO-1-IMIDAZOLYL)ETHYL] HETEROARYLOXY ETHERS

Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Sept. 11, 1972, Ser. No. 288,111

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **3 Claims**

Heteroaryloxy ethers of 1-(2-hydroxyethyl)-5-nitroimidazole are herein described. These compounds are potent anti-microbial agents. They are prepared by the reaction of a heteroaromatic alcohol with 1-(2-chloroethyl)-2-methyl-5-nitroimidazole in aprotic polar solvents in the presence of base and sodium or potassium iodide.

3,828,057

AMINO DERIVATIVES OF PYRAZOLOPYRIDINE KETONES

Theodor Denzel, Nurnberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 146,812, May 25, 1971. This application Sept. 26, 1972, Ser. No. 292,363

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 H **10 Claims**

New amino derivatives of pyrazolo[3,4-b]pyridine-5-ketones as well as their salts are useful as central nervous system depressants. These compounds also increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,828,058

PROCESS FOR THE MANUFACTURE OF 1,1'-DI-SUBSTITUTED-4,4'-BIPYRIDYLIUM SALTS

John Francis Cairns, John Edward Colchester, and John Hubert Entwisle, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,248

Claims priority, application Great Britain, Apr. 5, 1968, 16,474/68

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 D 14 Claims

A process for the manufacture of 1,1'-disubstituted-4,4'-bipyridylium salts which comprises treating the corresponding 1,1' - disubstituted - 1,1',4,4' - tetrahydro - 4,4'-bipyridyl with a salt of a metal capable of existing in at least two valency states wherein the metal is in a higher valency state and the redox potential of the metal salt in water between different valency states of the metal is more positive than −1.48 volts as compared with the saturated calomel electrode.

3,828,059

CERTAIN 1,2-BENZISOTHIAZOLE-1,1-DIOXIDES

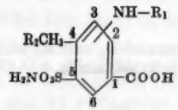
Peter Werner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Original application June 16, 1971, Ser. No. 153,879, now Patent No. 3,758,522, dated Sept. 11, 1973. Divided and this application Sept. 13, 1972, Ser. No. 288,763

Int. Cl. C07d *91/06*

U.S. Cl 260—301 4 Claims

The invention relates to a series of new compounds, their salts and esters and to methods for the preparation of the compounds having the general formula:



in which the NH-R_1 group can be in the 2- or 3-position, R_1 represents an aliphatic radical with from 3 to 8 carbon atoms in the chain, or a mononuclear aromatically or a mononuclear heterocyclically substituted methyl or ethyl group, and R_2 represents an unsubstituted or substituted phenyl group.

The compounds of the invention possess pronounced diuretic and saluretic activities.

3,828,060

HETEROCYCLIC NITROGEN- AND SULFUR-CONTAINING OPTICAL BRIGHTENER COMPOUNDS

Warren I. Lyness, Mount Healthy, Ronald T. Amel, Springfield, and Gary E. Booth, Oxford, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation of application Ser. No. 846,601, July 31, 1969, now Patent No. 3,711,474, dated Jan. 16, 1973. This application Nov. 9, 1972, Ser. No. 305,208

Int. Cl. C07d *91/04, 91/24*

U.S. Cl. 260—301 2 Claims

Optical brightener compounds defined as 2-benzisothiazolonyl - S - dioxide compounds, *o*-disulfophenylimidinyl compounds and benzisothiazolyl-S-dioxide compounds. The optical activity of these compounds can be employed to advantage in the optical brightening of a wide variety of natural and synthetic materials. They are useful in the brightening of fabrics and find application in the preparation of laundry detergent compositions and hypochlorite bleach-containing compositions.

3,828,061

MULTI-STEP PROCESS FOR PREPARING 2,3,5,6-TETRAHYDROIMIDAZO[2,1-b]THIAZOLES

Asbjorn Baklien, Kingsbury, Victoria, and Jan Kolm, Kew, Victoria, Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia

No Drawing. Original application July 14, 1966, Ser. No. 565,092, now Patent No. 3,759,937. Divided and this application Apr. 3, 1972, Ser. No. 240,773

Claims priority, application Australia, July 19, 1965, 61,653/65; July 26, 1965, 61,931/65; Aug. 31, 1965, 63,415/65; Sept. 8, 1965, 63,786/65

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.7 7 Claims

Process for preparing certain 2,3,5,6-tetrahydroimidazo [2,1-b]thiazoles which includes reacting certain aziridines with thiourea or thiocyanic acid and ring-closing the product so obtained.

3,828,062

PROCESS FOR THE PREPARATION OF DES A-9β-STEROIDS

Andor Furst, Basel, Ludwig Labler, Allschwil, Werner Meier, Bottmingen, and Peter Muller, John William Scott, and Erich Widmer, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,091

Claims priority, application Switzerland, May 21, 1970, 7,498/70

Int. Cl. C07d *85/00*

U.S. Cl. 260—307 H 17 Claims

DesA-9β-steroids are produced by the hydrogenation of desA-Δ^9-steroids using a palladium catalyst in the presence of hydrobromic acid. These compounds are useful intermediates for the preparation of hormonally active 9β,10α-steroids.

3,828,063

BENZISOXAZOLO(THIONO)PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Walter Lorenz, Wuppertal-Cronenberg, Horst Böshagen, Haan, Rhineland, and Ingeborg Hammann and Wolfgang Behrenz, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

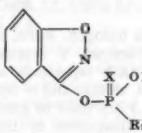
No Drawing. Filed June 9, 1971, Ser. No. 151,515

Claims priority, application Germany, June 26, 1970, P 20 31 750.4

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D 2 Claims

Benzisoxazolo(thiono)phosphoric(phosphonic) acid esters of the general formula



(I)

in which

R is a lower alkyl radical,

R_1 is a lower alkyl or alkoxy radical, and

X is an oxygen or sulfur atom,

which possess insecticidal, acaricidal, nematocidal and, in some cases, fungicidal properties.

3,828,064

METHOD OF PREPARING 1,5-DISUBSTITUTED-2-NITROIMIDAZOLES

John Martin, Wayland, and Francis Johnson, Newton Lower Falls, Mass., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,742

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 2 Claims

Various 1,5-disubstituted - 2 - nitroimidazoles are prepared by reacting a 1,5-disubstituted -2-haloimidazole in an organic solvent with an alkyl or aryl lithium compound

at a temperature between minus 75° and minus 30° C. and thereafter contacting the mixture with a solution of dinitrogen tetroxide followed by isolation of the desired product.

3,828,065
2-METHYL-5-NITRO-1-(2-PHENYLTHIOETHYL) IMIDAZOLES
Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
No Drawing. Filed Dec. 11, 1972, Ser. No. 314,132
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **10 Claims**

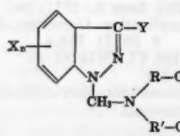
The present invention is concerned with 2-methyl-5-nitro-1-(2-phenylthioethyl)imidazoles. These compounds are prepared by the condensation of substituted thiophenols with 1-(2-chloroethyl)-5-nitro - 2-methylimidazole in the presence of base in a polar solvent. The compounds of this invention are anti-protozoal agents.

3,828,066
DIGLYCIDYLIMIDAZOLIDONES
Daniel Porret, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Dec. 29, 1972, Ser. No. 319,961
Claims priority, application Switzerland, Jan. 5, 1972, 108/72
Int. Cl. C07d *49/30, 49/34*
U.S. Cl. 260—309.6 **2 Claims**

Diglycidylhexahydrobenzimidazolone and diglycidyltetrahydrobenzimidazolone. These compounds can be used by curing with amines or anhydrides, to manufacture casting resins, electrical resins, sintering powders and compression moulding compositions.

3,828,067
N-(INDAZOLYL-N¹-METHYL) DIALKANOLAMINES
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.
No Drawing. Filed Nov. 20, 1972, Ser. No. 308,156
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **3 Claims**

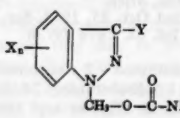
Compounds that have the structural formula



wherein X represents halogen, nitro, amino, acetamino, or (halobenzylidene)amino; Y represents hydrogen or halogen; R and R′ each represents an alkylene group having 1 to 8 carbon atoms; and *n* represents a number in the range of 0 to 3 are used to control the growth of fungi and bacteria. Illustrative of these compounds is N-(3-chloroindazolyl-N¹-methyl)diethanolamine.

3,828,068
[(SUBSTITUTED INDAZOLYL)-N¹-METHYL] CARBAMATES
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.
No Drawing. Continuation-in-part of applications Ser. No. 141,999, May 10, 1971, now Patent No. 3,741,979, and Ser. No. 247,084, Apr. 24, 1972. This application Nov. 29, 1972, Ser. No. 310,670
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **3 Claims**

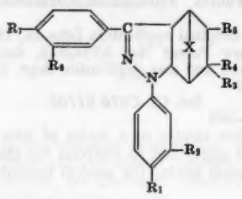
Compounds that have the structural formula



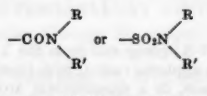
wherein X represents halogen, nitro, amino, acetamino, or (halobenzylidene)amino; *n* represents an integer in the range of 0 to 3; each R represents hydrogen, lower alkyl, phenyl, halophenyl, or nitrophenyl; when *n* is 0, Y represents halogen; and when *n* is 1 to 3, Y represents hydrogen or halogen are used to control the growth of fungi and bacteria. Illustrative of these compounds is (3-chloroindazolyl-N¹-methyl)N-methylcarbamate.

3,828,069
1,3-DIARYLHEXAHYDROINDAZOLE DERIVATIVES AS OPTICAL BRIGHTENERS
Mauro Stagi, Allschwil, Switzerland, assignor to Ciba-Geigy AG., Basel, Switzerland
No Drawing. Filed Apr. 5, 1972, Ser. No. 241,385
Claims priority, application Switzerland, Apr. 19, 1971, 5,632/71
Int. Cl. C07d *49/10*
U.S. Cl. 260—310 D **2 Claims**

The present invention relates to new 1,3-diaryl-3a,4,5,6,7,7a-hexahydroindazoles, which are useful as optical brighteners for high molecular organic materials. Said compounds are of the formula



or positional isomers of R_3 and R_4 with R_5, wherein R_1 represents trifluoromethyl, nitrile, a —COOR,



radical, wherein R and R′ independently of one another represent hydrogen, or alkyl containing 1–4 carbon atoms and optionally substituted by hydroxyl, alkoxy, amino, sulphonic acid or carboxylic acid, or R and R′ together with the nitrogen represent pyrrolidino or optionally methyl-substituted morpholino or piperidino, or the —SO_2R″ radical, wherein R″ represents alkyl with 1 to 4 carbon atoms optionally substituted by hydroxyl, alkoxy, amino, sulphonic acid or carboxylic acid, or represents alkenyl with 2 to 4 C atoms or aryl, R_2 denotes hydrogen, chlorine or alkyl containing 1 to 3 carbon atoms, R_3, R_4 and R_5 independently of one another denote hydrogen, nitrile, alkyl possessing 1 to 4 carbon atoms, a —COOY or

radical, wherein Y and Y′ independently of one another represent hydrogen or alkyl with 1 to 4 carbon atoms optionally substituted by hydroxyl, or Y and Y′ together with the nitrogen represent pyrrolidino or optionally methyl-substituted piperidino or morpholino, or R_4 and R_5 together denote a fused benzene ring optionally containing non-chromophoric substituents, R_6 and R_7 independently of one another denote hydrogen, halogen up

to atomic number 35 or alkyl possessing 1 to 4 carbon atoms and X denotes —CH_2, —O— or —NZ—, wherein Z represents alkyl with 1 to 4 carbon atoms.

3,828,070

AMINOETHANESULFONYL DERIVATIVES AND THEIR PRODUCTION

Shun-ichi Naito, 35 Murasakina Kamitoridacho, Kita-ku, Kyoto, Japan

No Drawing. Original application July 19, 1971, Ser. No. 164,007, now Patent No. 3,743,647. Divided and this application Dec. 26, 1972, Ser. No. 318,555

Claims priority, application Japan, Aug. 27, 1970, 45/75,350, 45/75,351, 45/75,352; Dec. 18, 1970, 45/114,446, 45/114,447

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.12 R 2 Claims

Aminoethanesulfonyl derivatives having a general formula R—$SO_2CH_2CH_2Y$ where R is selected from a group consisting of thiazolyl-2-amino, 1-pyrrolyl, 4-methylpiperazyl, and 1-indolyl and Y is NH_2 or, when R is thiazolyl-2-amino, said Y may be nicotinoylamino as well as manufacture methods thereof were disclosed.

3,828,071

CATALYTIC OXIDATION OF ARYLMETHANE COMPOUNDS

Hellmut Kast, Hans Baumann, and Udo Mayer, Ludwigshafen, and Andreas Oberlinner, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 28, 1972, Ser. No. 276,108

Claims priority, application Germany, Aug. 4, 1971, P 21 38 931.1; Oct. 22, 1971, P 21 52 703.7; May 29, 1972, P 22 26 039.5; June 2, 1972, P 22 26 936.9

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.15 5 Claims

A process for the catalytic oxidation of p-amino-substituted di-(hetero)-arylmethane and tri-(hetero)-arylmethane compounds with oxygen in the presence of a quinone and a catalyst containing a heavy metal in complex form. The process is eminently suitable for the production of p-amino-substituted diarylketones and basic dyes avoiding the usual pollution problems.

3,828,072

PROCESS FOR PREPARING COMPOUNDS OF THE BENZOTHIOXANTHENE SERIES

Ernst Spietschka, Oberauroff, Taunus, and Josef Landler, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 10, 1972, Ser. No. 270,188

Claims priority, application Germany, July 10, 1971, P 21 34 517.5

Int. Cl. C07d *65/17*

U.S. Cl. 260—328 5 Claims

Process for preparing compounds of the benzothioxanthene series, wherein compounds of the 1-(2'-aminophenylmercapto)-naphthalene series or of the 1-phenylmercapto-8-aminonaphthalene series are reacted in tertiary amines with compounds yielding nitrosyl groups and the diazonium compounds so obtained are heated. This process is suited for all compounds which contain the benzothioxanthene ring, independently of their substituents. The products obtained by this process have a markedly higher purity and are obtained in a higher yield as compared to other processes.

3,828,073

4-HYDROXY - 2H - 1 - BENZOTHIOPYRAN-3-CARBOXAMIDES AND THEIR CORRESPONDING S-OXIDES

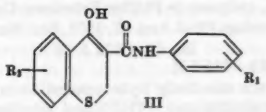
Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Mar. 23, 1973, Ser. No. 344,381

Int. Cl. A61k *27/00;* C07d *65/14*

U.S. Cl. 260—327 TH 3 Claims

Compounds having the following structural formula are disclosed:



III

In the above formula R_1 and R_2 are hydrogen, alkyl, aryl, aralkyl, alkoxy, halogen, cyano, nitro, trifluoromethyl and the like. Also disclosed are their corresponding S-oxides. These compounds are useful as anti-inflammatory agents.

3,828,074

PROCESS FOR THE PRODUCTION OF 3-THIENYLACETIC ACID

John Kirby Quick, Redhill, Kenneth Richardson, Ashington, and Kenneth Utting, Lower Kingswood, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,998

Claims priority, application Great Britain, Nov. 25, 1970, 55,971/70

Int. Cl. C07d *63/12*

U.S. Cl. 260—332.2 A 15 Claims

Thiophene is converted into 3-thienylacetic acid or an alkyl ester thereof via (a) 2,5-dichlorothiophene, (b) 2,5-dichloro-3-chloromethylthiophene, (c) the novel 2,5-dichloro-3-cyanomethylthiophene and (d) either 3- cyanomethylthiophene or the novel 2,5-dichloro-3-thienylacetic acid or an alkyl ester thereof. The produced 3-thienylacetic acid or an alkyl ester thereof can be further converted into 3-thienylmalonic acid which in turn may be converted to α-carboxy - 3 - thienylmethylpenicillin or an ester thereof.

3,828,075

SYNTHESIS OF 1,5-DIMETHYL-6,8-DIOXABICYCLO[3.2.1]OCTANE

Hans K. Dietl, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 8, 1972, Ser. No. 278,841

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 3 Claims

1,5-Dimethyl-6,8-dioxabicyclo[3.2.1]octane is prepared by reacting 2-methyl-1-heptene-6-one with a peracid or peroxide.

3,828,076

3-(3-SUBSTITUTED AMINO-2-HYDROXYPROPOXY)-2-SUBSTITUTED-4-PYRANONES

Burton Kendall Wasson, Valois, Quebec, and Clarence Stanley Rooney, Beaconsfield, Quebec, Canada, assignors to Merck Sharp & Dohme (I.A.) Corporation, Rahway, N.J.

No Drawing. Filed Mar. 15, 1973, Ser. No. 341,422

Int. Cl. C07d *7/16*

U.S. Cl. 260—345.9 3 Claims

3 - (3 - Substituted amino-2-hydroxypropoxy)-2-substituted-4-pyranone products possessing β-adrenergic blocking properties are described. Products are made by reaction of 3-hydroxy-2-substituted-4-pyranone with an epihalohydrin and the epoxide formed reacted with the appropriate substituted amine.

3,828,077

PRODUCTION OF 2,3-DIHYDROFURAN

Gerhard P. Nowack and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,704

Int. Cl. C07d *5/08*

U.S. Cl. 260—346.1 R 5 Claims

Furans are selectively hydrogenated to mixtures comprising tetrahydrofuran (THF) and significant amounts of 2,3-dihydrofurans by contact with hydrogen and a ruthenium catalyst in the presence of an organic nitrogen compound which functions as a reaction modifier.

3,828,078

4-AMINO-3-(HALO, NITRO OR TRIFLUOROMETHYL) - 5 - TRIFLUOROMETHYL BENZENESULFONAMIDES

Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Apr. 19, 1971, Ser. No. 135,433, now abandoned. Divided and this application Jan. 26, 1973, Ser. No. 326,653

Int. Cl. C07c *143/80*

U.S. Cl. 260—397.7 R 4 Claims

This invention relates to a novel method for the treatment of parasitic diseases and the compositions used in said treatment. More specifically this invention relates to benzenesulfonamides substituted at the 3, 4, and 5 positions of the benzene ring and to the use of such compounds for the treatment of mature and immature liver fluke infections.

3,828,079

4-AMINO-3,5-(TRIFLUOROMETHYL OR BROMO) BENZENE SULFONAMIDES

Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Apr. 19, 1971, Ser. No. 135,474. Divided and this application Jan. 30, 1973, Ser. No. 327,557

Int Cl. C07c *143/80*

U.S. Cl. 260—397.7 R 5 Claims

Novel substituted benzenesulfonamides are useful as agents for the treatment of both mature and immature liver fluke infections. The benzensulfonamide is substituted on the sulfonamide nitrogen with loweralkoxy, substituted loweralkyl and heterocyclic in which the sulfonamide nitrogen is included in the heterocyclic ring. The benzene ring is variously substituted at the 3- and 5-positions and unsubstituted or substituted with an amino group at the 4-position. Compositions containing these compounds for the treatment of mature and immature liver fluke infestation are also disclosed.

3,828,080

ANDROSTANE - 17β - CARBOXYLIC ACIDS AND PROCESSES FOR THE PREPARATION THEREOF

Gordon Hanley Phillipps, Wembley, and Peter John May, North Harrow, England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,574

Int. Cl. C07c *169/52*

U.S. Cl. 260—397.1 23 Claims

The specification describes new androstane compounds having anti-inflammatory activity. The new androstanes described in the specification have an esterified 17β-carboxylic acid grouping wherein the alcohol residue comprises a lower alkyl group; a lower alkyl group substituted by either at least one halogen atom or a lower alkoxycarbonyl group; or a (C_{2-4}) lower alkyl group substituted by a lower acyloxy group. The 17α-grouping of these androstanes is an esterified hydroxy group comprising a formyl, C_{2-4} alkanoyl or benzoyl group.

3,828,081

STEROIDYL-ESTRATRIENES

Alberto Ercoli, Milan, Rinaldo Gardi, Carate Brianza, and Romano Vitali, Casatenovo, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 129,634, Mar. 30, 1971. This application Jan. 31, 1973, Ser. No. 328,208

Int. Cl. C07c *169/60*

U.S. Cl. 260—397.2 21 Claims

Biologically active disteroidyl ethers consisting of two steroid nuclei joined together by an oxygen bridge are prepared by reacting a 17-hydroxy estratriene with an enol ether or an acetal of a 3-ketosteroid of the androstane, gonane, cholestane or pregnane series and their 19-nor derivatives. The reaction is carried out under anhydrous conditions and in the presence of an acid catalyst, at a temperature higher than 70° C.

3,828,082

INSECT MOULTING HORMONES, AND METHOD FOR THEIR PREPARATION AND USE

Luigi Canonica, Milan, Bruno Danieli, Cesano Maderno, and Giorgio Ferrari, Milan, Italy, assignors to Dauten S.A., Roveredo, Switzerland

Filed Jan. 14, 1972, Ser. No. 217,842

Claims priority, application Italy, Jan. 18, 1971, 19,466/71; July 29, 1971, 7,806/71

Int. Cl. C07c *169/60*

U.S. Cl. 260—397.25 6 Claims

A biological insecticide, based on insect moulting hormones, is disclosed, the active hormonal principle being extracted from the seeds of Kaladana plants: the latter are a vegetable species belonging to the Convolvulaceae

family, Ipomaea section, genus Calonyction (Choisy) Hallier f. A method is described for carrying out the extraction of the active principle, which is a crystalline mixture of crustecdysone, makisterone A, ecdysone and a newly discovered chemical species, which has been called muristerone herein. The hormones in question are used at concentrations of at least 0.1% of active principle, to control various agricultural pests such as *Doryphora decemlineata, Pieris brassicae*, and others.

3,828,083

NOVEL 6α,16α-DIMETHYL STEROIDS

Klaus Kieslich, Ulrich Kerb, Klaus Mengel, and Amadeo Domenico, Berlin, Germany, assignors to Schering Aktiengesellschaft

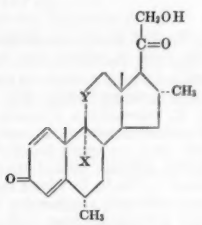
No Drawing. Filed Nov. 23, 1971, Ser. No. 201,546

Claims priority, application Germany, Nov. 28, 1970, P 20 59 310.6

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.45 **12 Claims**

6α,16α-Dimethyl steroids of the formula



wherein X is a halogen atom and Y is β-halomethylene in which the halogen atom has the same or a lower atomic weight than X, β-hydroxymethylene or carbonyl, and 21-esters thereof possess a high ratio of anti-inflammatory activity to thymolytic side-effects.

3,828,084

PHOSPHOSULFURIZED SURFACE ACTIVE MATERIALS AND METHOD OF PRODUCING SAME

Harry Kaplan, Westfield, and John Papalos, Kearney, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,815

Int. Cl. C07f *9/08;* **C08h** *9/00*

U.S. Cl. 260—399 **9 Claims**

A phosphosulfurized composition comprising the product of the reaction of a compound containing the equivalent of about .25 to about 4.0 moles P_2S_5 with about 1 to about 5 moles of a nonionic surface active agent in the presence of 0 to 5% by weight of water and about .01 to about 5.0 of a phosphorous containing acid and a method of making same.

3,828,085

NOVEL AMIDOAMINE OXIDES

Alson K. Price, Eggertsville, and Abraham N. Fenster, Getzville, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 9, 1970, Ser. No. 53,705

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 **10 Claims**

Amidoamine oxides of the formula

$$R_fCON-RQ$$
$$\quad\quad\quad Y$$

wherein R_f is a perfluoroalkyl group or a polyfluoroisoalkoxyalkyl group; Y is hydrogen or a lower alkyl group; R is a lower alkylene radical or a direct bond between nitrogen and a carbon in Q and Q is selected from certain aliphatic cycloaliphatic and heterocyclic aromatic radicals containing an amine oxide group. These compounds are useful as surface active agents in liquid and solid fire-fighting compositions, in drug compositions suitable for injection into the blood stream of mammals, and in artificial blood compositions.

3,828,086

METALLIC DIBASIC FATTY SOAP BASED GREASES

Harold E. Kenney, Jenkintown, and Edward T. Donahue, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 25, 1972, Ser. No. 275,009

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **4 Claims**

Monohydroxy fatty acids or esters are cyanoethylated and the cyanoethoxy fatty derivative is treated with dilute hydrogen peroxide in a weakly basic medium to convert the cyano group to an amide function which is then hydrolyzed to the dibasic acid. The dibasic acid is reacted with an appropriate metallic base such as lithium, sodium and calcium to make the dibasic soap which is dispersed in a petroleum oil base or a synthetic base oil of the diester type to form a grease.

3,828,087

SILOXANE POLYMERS FOR SOIL-REPELLENT AND SOIL-RELEASE TEXTILE FINISHES

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application June 28, 1971, Ser. No. 157,759, now Patent No. 3,809,783, which is a division of application Ser. No. 38,899, May 19, 1970, now Patent No. 3,639,156. Divided and this application Mar 7, 1972, Ser. No. 232,513

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 B **2 Claims**

Fluorocarbon silanes are copolymerized with silanes which contain two or more alkyleneoxy groups. The copolymers are useful for application to fibrous materials to provide both soil repellency and soil releasability.

3,828,088

METHOD FOR THE PREPARATION OF 2-ACETAMIDOETHYL(4 - CHLOROPHENYL) - α - HALOACETATE

Richard F. Shuman, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed July 13, 1972, Ser. No. 271,448

Int. Cl. C07c *119/20*

U.S. Cl. 260—453 R **9 Claims**

A method for preparing the intermediate 2-acetamidoethyl 4-chlorophenyl-α-haloacetate which is useful in preparing 2-acetamidoethyl (3-trifluoromethylphenoxy) (4-chlorophenyl)acetate. The process comprises treating 4-chlorophenyl-α-haloacetonitrile with 2-acetamidoethanol in the presence of an acid to form an imino intermediate which is then hydrolyzed to afford the intermediate 2-acetamidoethyl 4-chlorophenyl-α-haloacetate. This intermediate may be treated with 3-trifluoromethylphenol in the presence of a base, to afford 2-acetamidoethyl (3-trifluoromethylphenoxy) (4-chlorophenyl)acetate, a hypocholesterolemic and hypolipemic agent which effective-

ly reduces the concentration of cholesterol, triglycerides and other lipids in blood serum.

3,828,089

PREPARATION OF AROMATIC ISOCYANATES IN FIXED BED REACTOR

Philip D. Hammond, North Haven, Conn., John A. Scott, Joliet, Ill., and William M. Clarke, North Haven, and William I. Denton, Cheshire, Conn., assignors to Olin Corporation

Filed Dec. 1, 1972, Ser. No. 311,055
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PC **12 Claims**

Aromatic isocyanates are produced directly from aromatic nitro compounds in a continuous process in which carbon monoxide and aromatic nitro compounds are reacted in a fixed bed reactor in the presence of a solvent and soluble catalyst.

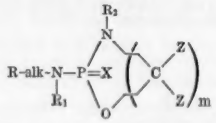
3,828,090

ALKYLSULFONIC ACID ESTERS OF 1,3,2-OXAZAPHOSPHA-CYCLIC COMPOUNDS

Herbert Arnold, Heidelberg, Friedrich Bourseaux, Brackwede, Jürgen Potel, Gadderbaum, and Norbert Brock, Uerentrup, Germany, assignors to Asta-Werke Aktiengesellschaft, Chemische Fabrik, Brackwede, Westphalia, Germany

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,273
Claims priority, application Germany, Feb. 19, 1971, P 21 07 936,7; Jan. 14, 1972, P 22 01 675.7
Int. Cl. C07d *105/02, 143/00*
U.S. Cl. 260—456 A **4 Claims**

New alkyl sulfonic acid esters of 1,3,2-oxazaphospha-cyclic compounds of formula I



I

These new compounds produce a high immunsuppressing activity in humans.

3,828,091

2-ARYL-3-ALIPHATICTHIOACRYLONITRILES

Jerry G. Strong, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,756
Int. Cl. C07c *121/70*
U.S. Cl. 260—465 F **11 Claims**

2-Aryl-3-aliphatictthioacrylonitriles form a new class of herbicides. They are effective as both pre-emergence and post-emergence herbicides. They are highly effective against Crabgrass, Yellow Foxtail grass, Johnson grass, Barnyard grass and Turnip (representative of weedy mustards). These compounds are readily synthesized by reacting an appropriate mercaptan with an appropriate acrylonitrile in the presence of an organic solvent which azeotropes with water and a suitable acid catalyst.

3,828,092

PROCESS FOR PRODUCING ALKYL ESTERS OF ω-CYANO-ACIDS

Pierre Chabardes, Pierre Gandilhon, and Charles Grard, Lyon, and Michel Thiers, La Cote par Brignais, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed June 26, 1967, Ser. No. 649,033
Claims priority, application France, July 13, 1966, 69,417
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.4 **4 Claims**

Alkyl ω-cyano-valerates and 5-cyano-penten-4-oates are prepared by a process which comprises heating a mixture of acrylonitrile and an alkyl acrylate under hydrogen pressure in the presence of a ruthenium compound as catalyst.

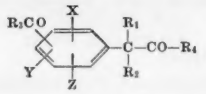
3,828,093

BENZOYLPHENYLACETIC ACIDS AND RELATED COMPOUNDS

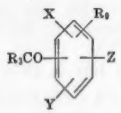
David Edmund Bays and Roy Vivian Foster, London, England, assignors to Allen & Hanburys Limited, London, England

No Drawing. Filed July 25, 1968, Ser. No. 747,435
Claims priority, application Great Britain, July 31, 1967, 35,166/67
Int. Cl. C07c *65/20, 69/76*
U.S. Cl. 260—469 **9 Claims**

Novel phenylacetic derivatives are provided of the general formula



in which R_1, R_2, R_3 and R_4 are as defined herein, specifically wherein R_1, and R_2 which may be the same or different, represent a hydrogen atom or an alkyl radical containing 1–6 carbon atoms, which may be substituted by an aryl group, R_3 represents a cycloalkyl radical containing from 3–9 carbon atoms or an aryl radical which may be substituted by 1 or more halogen atoms or an alkyl, nitro, hydroxy, alkoxy, phenyl or trifluoromethyl group, or by a group $—NR_5R_6$ in which R_5 and R_6 which may be the same or different, represent a hydrogen atom or an alkyl radical containing from 1–6 carbon atoms, R_4 is a hydroxy, aryloxy or lower alkoxy group containing 1–6 carbon atoms, which may be substituted by an aryl radical or an amine group $—NR_5R_6$ or R_4 may be $—NR_7R_8$ in which R_7 and R_8, which may be the same or different, represent a hydrogen atom or an hydroxy group and an alkyl group containing 1–6 carbon atoms or an arylalkyl or aryl group, or R_7 and R_8 together may form a heterocyclic ring which may contain additional hetero atoms; X, Y and Z may the same or different and represent a hydrogen or halogen atom, a lower alkyl, hydroxy, lower alkoxy or amino group with the following provisos, that (a) when R_1, R_2, X, Y and Z are hydrogen, R_3 is phenyl and R_4 is hydroxyl then the group R_3CO must be *meta* oriented to the group $—CR_1R_2COR_4$; (b) when R_3CO is *para* oriented to the group $CR_1R_2COR_4$, R_1, R_2, X, Y and Z are hydrogen and R_3 is phenyl, then R_4 may not be a hydroxy, methoxy or primary amino group and (c) when Z is a methoxy group in the 2-position to the group $—CR_1R_2COR_4$ and X, Y, R_1 and R_2 are hydrogen and R_3 is phenyl then the group $R_3CO—$ may not be in the 5-position, and pharmaceutically acceptable salts thereof. These have anti-inflammatory or analgetic activity. The invention also provides a process for the production of these compounds from a ketone of the structure:



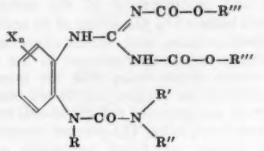
It also provides pharmaceutical compositions including phenylacetic derivatives.

3,828,094
SUBSTITUTED UREIDOPHENYLGUANIDINES

Arno Widdig, Blecher, Engelbert Kuhle, Bergisch Gladbach, Ferdinand Grewe, Burscheid, and Helmut Kaspers, Hans Scheinpflug, and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,147
Claims priority, application Germany, Nov. 6, 1969, P 19 55 750.7
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **11 Claims**

Substituted ureidophenylguanidines of the formula



(I)

in which

X stands for halogen, lower alkyl or lower alkoxy,

n stands for 0, 1 or 2,

R and R′ stand for hydrogen or lower alkyl,

R″ stands for hydrogen, cycloalkyl, alkylsulfonyl with up to 18 carbon atoms, di-lower alkylamino, or optionally substituted alkyl with up to 18 carbon atoms, aralkyl, phenyl, acyl with up to 18 carbon atoms, aroyl or arylsulfonyl, or

R′ and R″ jointly with the connecting nitrogen atom stand for a heterocyclic ring with 4 to 7 ring carbon atoms, the ring possibly containing oxygen or sulfur as further hetero atoms, and

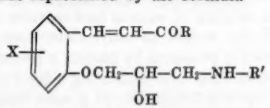
R‴ stands for alkyl with up to 12 carbon atoms, which possess fungicidal properties.

3,828,095
AMINOALCOHOLS DERIVED FROM ORTHO-TRANS-HYDROXY-CINNAMIC ACIDS AND ESTERS

Eugene Boschetti, Venissieux, Darius Molho, Boulogne-sur-Seine, and Louis Fontaine, Lyon, France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,381
Claims priority, application France, Apr. 9, 1971, 7112668
Int. Cl. C07c *101/18*
U.S. Cl. 260—471 R **10 Claims**

Compounds represented by the formula



in which R is an optionally substituted hydroxy, alkoxy or amino radical, R′ is a branched alkyl radical and X is hydrogen or a halogen. The compounds have a strong blocking activity on the B-sympathetic receptors in man, particularly in the treatment of chest angina and tachyarrhythmia.

3,828,096
2-ALKOXYCARBONYL-3-ARYL-PROPYLAMINES

Joseph A. Meschino, North Wales, Pa., assignor to McNeil Laboratories, Inc.

No Drawing. Application June 9, 1969, Ser. No. 850,280, now abandoned, which is a division of application Ser. No. 596,100, Nov. 22, 1966, now Patent No. 3,483,186. Divided and this application May 4, 1972, Ser. No. 255,891
Int. Cl. C07c *101/04*
U.S. Cl. 260—471 A **2 Claims**

The compounds herein are derivatives of 4,5-dihydro-3H-2-benzazepine and 2,3,4,5-tetrahydro-1H - 2 - benzazepine, useful as hypotensives; and novel intermediates used in the preparation thereof.

3,828,097
PROCESS FOR THE PREPARATION OF CHLOROUS ACID

Joseph Callerame, Rochester, N.Y., assignor to Chemical Generators, Inc., Rochester, N.Y.

No Drawing. Filed Oct. 27, 1972, Ser. No. 301,329
Int. Cl. C01b *11/02, 11/08*
U.S. Cl. 423—472 **6 Claims**

A process of preparing chlorous acid is disclosed. An aqueous solution of the chlorate of an alkali metal or alkaline earth metal and the nitrate of an alkali metal or alkaline earth metal is flowed through a cation exchange resin, the active sites of which are occupied by hydrogen. The eluate is in the form of a chlorous acid solution.

3,828,098
SULFUR SUBSTITUTED BIS(POLYFLUORO-ALKOXYALKYL CARBOXYLIC ACIDS) AND DERIVATIVES THEREOF

Kenneth B. Gilleo, Buffalo, Edward S. Jones, Williamsville, and Edward G. Tajkowski, Amherst, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

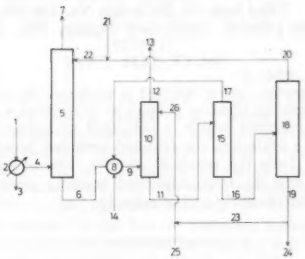
No Drawing. Filed Oct. 2, 1972, Ser. No. 294,139
Int. Cl. C07c *149/12*
U.S. Cl. 260—481 R **18 Claims**

Dicarboxylic acids, their alkali metal salts and lower alkyl esters which contain two polyfluoroalkoxyalkyl carboxy moieties joined by a —S— or a —S—alkylene—S— crosslink. These compounds are useful as surfactants, as water repellent agents, as corrosion resistant agents and dropwise condensation promoters.

3,828,099
PROCESS FOR SEPARATING METHACROLEIN

Ryozi Sato and Yoshio Ito, Yokohama, Japan, assignors to The Japanese Geon Co., Ltd., Tokyo, Japan

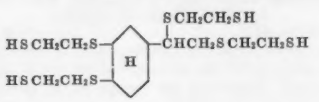
Filed Mar. 2, 1971, Ser. No. 120,276
Claims priority, application Japan, Mar. 4, 1970, 45/17,983
Int. Cl. C07c *47/20*
U.S. Cl. 260—601 R **9 Claims**



A method for separating methacrolein from a gaseous mixture thereof by absorbing the methacrolein with an organic solvent and then extracting the organic solvent from the resulting solution with water.

3,828,100
CYCLOALIPHATIC POLYTHIOLS
Richard A. Hickner and Edward W. Goss, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 18, 1972, Ser. No. 245,185
Int. Cl. C07c *149/26*
U.S. Cl. 260—609 D 4 Claims

Exemplary of the cycloaliphatic polythiols of this invention is the compound



The polythiols are useful in curing polyepoxide resins.

ERRATUM

For Class 423—472 see:
Patent No. 3,828,097

3,828,101
METHOD OF PREPARATION OF FERRITE CATALYSTS
Edward J. Miklas, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed Aug. 26, 1971, Ser. No. 175,381
Int. Cl. C01g *49/00*
U.S. Cl. 423—594 11 Claims

Improved catalysts for dehydrogenation can be prepared by coprecipitating the metal containing catalysts from a solution of metal ions in the presence of a low molecular weight polyhydric material such as pentaerythritol. The result of having the polyhydric material present is that the precipitate has the form of a gelatinous precipitate of improved processability. The catalyst itself is more active in dehydrogenations and physically stronger than comparable catalyst prepared by conventional methods.

3,828,102
METHOD OF PREPARATION OF TRITIUM-LABELLED PROTEINS
Pierre Fromageot, Le Chesnay, Lam Thanh Hung, Orsay, and Jean-Louis Morgat, Paris, France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Sept. 19, 1972, Ser. No. 290,316
Claims priority, application France, Oct. 1, 1971, 7135529
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 12 Claims

The protein to be labelled is protected by complexing with a specific bonding protein so as to form a stable and soluble complex which is subjected to halogenation followed by tritiation, the tritiated complex being then dissociated from the resultant mixture. The tritium-labelled protein and the tritium-labelled bonding protein are extracted successively and selectively.

ERRATUM

For Class 424—4 see:
Patent No. 3,827,841

3,828,103
INDIRECT HEMAGGLUTINATION TEST WITH SIMULTANEOUS ABSORPTION OF HETEROLOGOUS ANTIBODIES
Koichiro Fujita, Tokyo, Japan, assignor to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan
No Drawing. Filed Nov. 4, 1970, Ser. No. 87,014
Claims priority, application Japan, Nov. 10, 1969, 44/89,314
Int. Cl. G01n *1/00, 29/00, 33/16*
U.S. Cl. 424—12 3 Claims

An indirect hemagglutination test is provided herein whereby an antigen is adsorbed onto erythrocytes of animal origin and agglutination of the antigen-sensitized erythrocytes is induced by the action of an antibody specific to the adsorbed antigens, said method characterized in that the heterologous agglutinins present in the serum to be tested and which might react with the homologous red blood cells used as the antigen carrier are removed by use of a solution of decomposed red blood-cell membranes of the animal red blood cells. The present invention also provides for a reagent composed essentially of the aforementioned solution in conjunction with the erythrocytes containing the antigens adsorbed thereupon.

3,828,104
AEROSOL SPACE DEODORANT EMPLOYING CERTAIN ORGANIC PEROXIDES
James Douglass Barnhurst, Millington, and Adolph Renold, Somerset, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 818,042, Apr. 21, 1969, which is a continuation-in-part of application Ser. No. 552,404, May 24, 1966, both now abandoned. This application Oct. 26, 1971, Ser. No. 192,609
Int. Cl. A61l *13/00*
U.S. Cl. 424—45 10 Claims

Deodorant compositions comprising a normally gaseous, liquefied propellant said composition containig as a critical ingredient an organic peroxide having a half-life of at least 10 hours at 100° C.

3,828,105
HAIRDRESSING COMPOSITION AND PROCESS FOR PREPARATION THEREOF
Marina Saurano, Montreuil-sous-Bois, France, assignor to Societe Alexandre, Paris, France
No Drawing. Filed Nov. 4, 1971, Ser. No. 195,806
Int. Cl. A61k *7/00*
U.S. Cl. 424—70 2 Claims

A hair treatment composition comprising as essential ingredients a mixture of natural beef marrow extract and 1.8 to 2.2% by weight of cetyl ricinoleate. The beef marrow extract is produced by heating a kneaded mixture of marrow and water and separating a light yellow fraction arising upon solidification of a solid mass from the mixture, the light yellow fraction constituting the extract.

3,828,106
NOVEL ORAL PHARMACEUTICAL DOSAGE FORM
Harry W. Rudel, New York, N.Y., assignor to Biological Concepts, Inc., New York, N.Y.
No Drawing. Filed Jan. 3, 1972, Ser. No. 215,208
Int. Cl. A61k *17/00*
U.S. Cl. 424—239 12 Claims

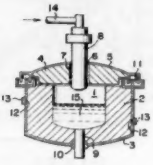
A pharmaceutical preparation suitable for oral administration comprises an active therapeutic ingredient in solid solution with a steroidal lipid, together with a pharmaceutically acceptable carrier for said mixture. The therapeutic ingredient may be, for example, a natural steroid hormone, and the lipid may be a sterol. The preparation may be provided in unit dosage forms such as tablets, lozenges, capsules, and the like.

ELECTRICAL

3,828,107
PLASMA SMELTING FURNACE

Sadaie Sone, Kuwana, Japan, assignor to Daido Seiko Kabushiki Kaisha, Nagoya-shi, Japan

Filed May 12, 1971, Ser. No. 142,614
Claims priority, application Japan, May 19, 1970, 45-42218
Int. Cl. F27b *3/00*
U.S. Cl. 13—1 **5 Claims**

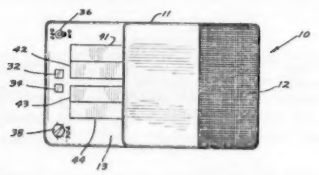


The present invention discloses a plasma smelting furnace which is formed by enclosing the outside of a refractory which forms the smelting chamber with a metallic plate completely and the smelting chamber is sealed against the outer atmosphere, and further characterized by the fact that the air in the inner space enclosed by the metallic plate is substituted by inert gas.

3,828,108
BINARY ORGAN AND CODING SYSTEM FOR OPERATING SAME

Floyd G. Thompson, 423 Thomas Ave., Minneapolis, Minn. 55405

Filed Mar. 22, 1972, Ser. No. 237,181
Int. Cl. G10h *1/00, 5/00*
U.S. Cl. 84—1.01 **4 Claims**



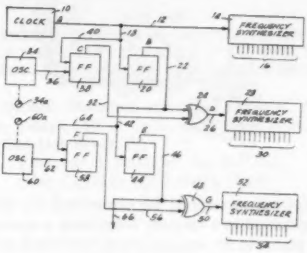
A tone generating oscillator selectively generates any one of the twelve tones of the musical scale upon activation of a unique combination of four keys. Other keys are provided for generating the selected note in a higher or a lower octave. Each of the tones is assigned a particular character consisting of a graphical representation of the utilization of one or more of the four keys; and, in a particular musical theme, these characters are displayed in the sequence in which the tones they represent occur in said theme.

3,828,109
CHORUS GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENT

Eugene S. Morez, Bensenville, Ill., assignor to Chicago Musical Instrument Co., Chicago, Ill.

Filed Feb. 20, 1973, Ser. No. 333,985
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **11 Claims**

An electronic musical instrument has a plurality of frequency synthesizers for separately generating the musical tones of each octave. Each of the frequency synthesizers is supplied with a train of clock pulses having a pulse repetition rate which is a multiple of the frequency of the highest musical tone generated by such frequency synthesizer. The pulse train applied to the frequency synthesizers for the highest octave is derived from a clock pulse source, and the pulse train applied to each of the other frequency synthesizers is derived from the pulse train supplied to the frequency synthesizer for the next

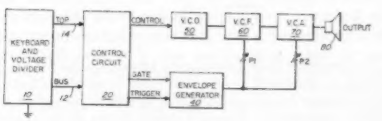


higher octave, by dividing the pulse repetition rate thereof by a factor which differs slightly from two. As a result, corresponding musical tones of successive octaves are not locked in phase relationship but have frequencies which differ slightly from pure harmonics so as to present a generally rolling or moving chorus effect when such tones are reproduced simultaneously.

3,828,110
CONTROL CIRCUITRY FOR ELECTRONIC MUSICAL INSTRUMENT

Dennis P. Colin, Beverly, Mass., assignor to ARP Instruments, Inc., Newton Upper Falls, Mass.

Continuation-in-part of Ser. No. 220,914, Jan. 26, 1972, abandoned. This application July 11, 1973, Ser. No. 378,350
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **25 Claims**



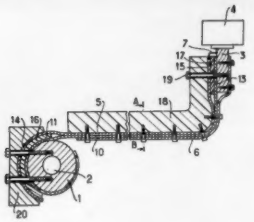
In an electronic musical instrument of the type including a keyboard and a resistor voltage divider having points there along respectively coupled by way of actuable keys associated with the keyboard to a single output bus, there is provided improved control electronics having output signals that control, for example, an envelope generator and a voltage controlled oscillator. The control electronics includes an oscillator and gate circuit coupled to the bus for providing a gate output signal which is present as long as at least one key is actuated, a sample/hold circuit coupled to the bus for providing a control voltage signal the amplitude of which is a function of the position of the actuated key, and a trigger signal means coupled to the keyboard and responsive to the gate circuit and the actuation of two or more keys for providing a trigger signal of shorter duration than the gate signal and occurring near the commencement of the gate signal.

3,828,111

ELECTRICAL CONNECTION, IN PARTICULAR, FOR CONNECTING TWO COOLED CONDUCTORS DISPOSED IN A VACUUM

Michel Berthet, Gif-sur-Yvette, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Oct. 3, 1972, Ser. No. 281,610
Int. Cl. H01v *11/00*
U.S. Cl. 174—15 C **13 Claims**



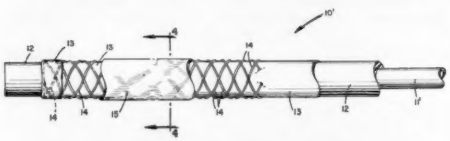
An electrical connection for connecting two cooled conductors disposed in a vacuum, comprising a superconductor junction placed in the vacuum, the ends of which are soldered respectively to the conductors, a stabilizing element which is a good conductor of heat and electricity at normal temperature, integral with the middle part of said junction and thermally isolated from this junction at the level of the ends and means for attaching said junction and said stabilizing element to a rigid isolating support.

3,828,112

COMPOSITE HOSE FOR CONDUCTIVE FLUID

Hans A. Johansen, Mantua; Dewey E. Whittaker, Ravenna, and Larry R. Phillippi, Mantua, all of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio

Filed Mar. 14, 1973, Ser. No. 341,137
Int. Cl. F16l *11/12*
U.S. Cl. 174—47 **9 Claims**



A composite hose particularly advantageous for use in conveying an electrical conductive paint in an electrostatic paint spray system has a synthetic resinous core tube such as nylon which is resistant to chemical attack by the paint, a contiguous substantially non-porous layer of synthetic resin which insulates the core tube against leakage of static charge therefrom, an extrusion or tape of semi-conductive synthetic resin containing particles of an electrical conductor dispersed uniformly therein lying in intimate contact about the insulating layer, a braided electrical conductor wound in electrical contact about the semi-conductive layer and an abrasion resistant sheath about the braid.

3,828,113

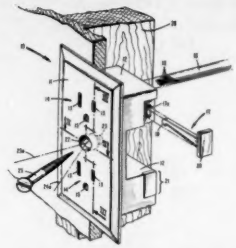
UNITARY ELECTRICAL RECEPTACLES

Richard Curtis Bourne, 1609 S. 23rd St., Lincoln, Nebr. 68502

Filed July 6, 1973, Ser. No. 377,094
Int. Cl. H02g *3/18*
U.S. Cl. 174—55 **14 Claims**

A unitary electrical receptacle or switch for installation after finishing of the surface in which it is to appear, which comprises internal electrical conductors for such a receptacle or switch enclosed by electrically insulating material which is formed into a housing portion and a cover plate portion, with openings in said housing portion for insertion of distribution cable to make the desired electrical contact with the internal conductors, openings in the cover plate portion for insertion of a plug into the receptacle or for protrusion of switching means from switches, and through-holes for connecting the unitary receptacle or switch to a structural member. Means may also be included for firmly connecting the distribution cable to such a receptacle or switch.

The housing portion may be designed to straddle a structural member. The flanges formed by the cover plate portion overhanging the housing portion may be provided with shoulders adapted to the thickness of various surfacing materials.

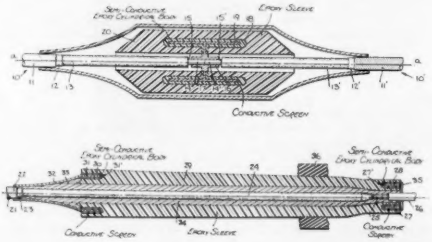


3,828,114

SYNTHETIC RESIN SLEEVE WITH EMBEDDED STRESS CONTROL SCREEN FOR HIGH-VOLTAGE CABLES

Paolo G. Priaroggia, Milan, and Gabriele Maschio, Monza, both of Italy, assignors to Industrie Pirelli Societe per Azioni, Milan, Italy

Filed Feb. 15, 1973, Ser. No. 332,689
Claims priority, application Italy, Mar. 14, 1972, 21795/72
Int. Cl. H02g *15/02, 15/08*
U.S. Cl. 174—73 R **8 Claims**



A sleeve of epoxy resin for use in a joint between high voltage electric cables or in a sealing end for such a cable, the sleeve having embedded therein, around the part of the cable to be electrically screened, a conductive screen embedded in semi-conductive, epoxy resin.

3,828,115

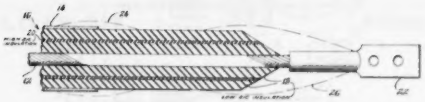
HIGH VOLTAGE CABLE HAVING HIGH SIC INSULATION LAYER BETWEEN LOW SIC INSULATION LAYERS AND TERMINAL CONSTRUCTION THEREOF

Andrew Hvizd, Jr., Oxford, Conn., assignor to The Kerite Company, Seymour, Conn.

Filed July 27, 1973, Ser. No. 383,323
Int. Cl. H01b *9/00, 7/02;* **H02g** *15/02*
U.S. Cl. 174—73 R **10 Claims**

The number of voids in the insulation of high voltage cable is significantly reduced by utilizing a multiple layer construc-

tion and therefore, the dielectric strength thereof is optimized by minimizing ionization therein. A field refraction barrier is disposed within the insulation to relax the electrical stress concentrations which would otherwise be encountered due to surface impurities at the interfacial boundries of the multiple



layer construction. In cables having an electric shield coaxially arranged about a load conductor, this field refraction barrier disperses the voltage gradient therebetween at terminations and splices and therefore, stress relief cones can be omitted therefrom in many instances.

3,828,116

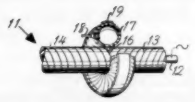
INFLATABLE CORONA RING AND CABLE TERMINATION METHOD EMPLOYING SAME

Martin S. Lonow, Spring Valley, N.Y., assignor to The Anaconda Company, New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,784

Int. Cl. H02g *15/02;* **G01r** *31/20;* **H01t** *19/02*

U.S. Cl. 174—73 R **5 Claims**



To terminate high voltage cables for testing, an infaltable tubuar annulus such as the inner tube of a tire, but with a corona resistant outer surface, is applied as a corona ring at the line where the shielding is cut from the cable insulation.

3,828,117

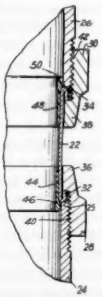
LIQUID-TIGHT SWIVEL COUPLER FOR ELECTRICAL CONDUIT

Jonah Eidelberg, 8 Clafford Ln., Huntington Station, N.Y. 11746; Thomas Mooney, 40 W. Cliff Dr., Mount Sinai, N.Y. 11766, and John J. Brett, Marion Ave., Glen Ellyn, Ill. 60137

Continuation-in-part of Ser. No. 90,496, Nov. 18, 1970, Pat. No. 3,710,911. This application Jan. 16, 1973, Ser. No. 324,089

Int. Cl. H02g *3/06;* **F16l** *19/00*

U.S. Cl. 174—84 S **2 Claims**



A swivel coupler for connecting a pair of rigid electrical conduits especially in a confined space, includes a tubular body member with an inner sleeve of rigid plastic material, which protrudes slightly beyond the ends of the body. A pair of nuts are slidably mounted on the outer peripheral surface of the tubular body between outwardly directed radial flanges adjacent opposite ends of the body and which thread a corresponding conduit. A method of fabricating the coupling is to reverse opposite body ends 180° to abut the outer peripheral surface of the body, have one end with an outside diameter smaller than the inside diameter of the nuts, position the nuts back to back on the body, and then enlarge the reduced end of the body to its normal diameter or larger.

3,828,118

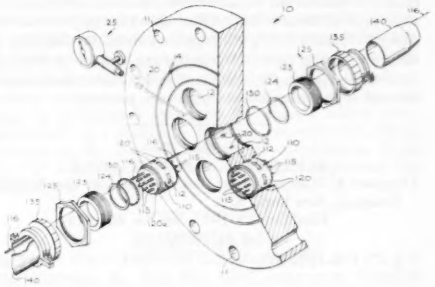
ELECTRICAL FEEDTHROUGH ASSEMBLIES FOR CONTAINMENT STRUCTURES HAVING SPECIALLY CONTROLLED ENVIRONMENTS AND METHOD OF MAKING

James A. Bushek, Woodland Hills, and David K. Sorensen, Westlake Village, both of Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 6, 1972, Ser. No. 241,722

Int. Cl. G21c *13/02;* **H01b** *17/26*

U.S. Cl. 174—11 R **18 Claims**

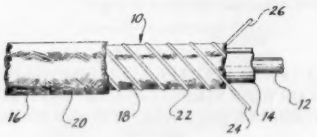


A construction and method of making a hermetically sealed electrical feedthrough assembly particularly useful for providing electrical connections to and from a containment structure having a specially controlled environment. The feedthrough assembly construction and method of making provide a resultant assembly which achieves the desired electrical performance, while also being able to maintain the integrity of the controlled environment of the containment structure over long periods of time under widely varying environments and for both normal and emergency conditions. The feedthrough assembly includes a header plate containing feedthrough modules employing a specially chosen and designed cast epoxy sealing system which provides for hermetic sealing of each module to the header plate while also permitting each module to be readily mounted and removed. Continuous and simultaneous pressure testing of the integrity of both the inner and outer sealing of each module is made possible by the provision of internal manifolding ports within the header plate which communicate with each other as well as with a porous reticular dielectric preform provided in each module. The porous reticular dielectric preform serves to support the module feedthrough contacts during casting, and afterwards, because it is porous, permits simultaneous pressure testing of the integrity of the sealing of the feedthrough contacts within the modules along with the testing of the integrity of the sealing of the module mountings to the header plate. Each feedthrough module additionally has a construction which provides substantially rigid electrical and mechanical coupling between input and output conductors so as to eliminate the need for insulated wires within the assembly.

3,828,119
HIGH TEMPERATURE RESISTANT ELECTRICAL CONDUCTOR, AND METHOD OF PRODUCING SAME

Joe Allen Warburton, and Henry Lewis Wilson, both of Chelmsford, Mass., assignors to General Electric Company, New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,470
Int. Cl. H01b 7/00
U.S. Cl. 174—121 A **21 Claims**

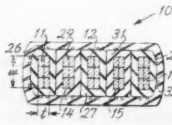


A heat resistant insulated electrical wire comprising a metallic conductor, a polymeric organic insulation surrounding the conductor and an overlying covering of a composite body of heat resistant carded staple fiber. The composite body of carded fiber covering the polymeric insulation is impregnated with a bonding agent and comprises at least two layers of carded fiber slivers with an intermediate strand matrix of heat shrunk organic filaments contracted around the inner layer of sliver of carded fiber about the polymeric insulation and thereby firmly gripping the polymeric insulation and securely affixing the bonded composite body of carded staple fiber to the insulated conductor. The disclosure also includes a method of producing the electrical wire product.

3,828,120
FLEXIBLE FLAT POWER CABLE

Theodore E. Hansen, Grant, Ind., assignor to The Anaconda Company, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,718
Int. Cl. H01b 7/08
U.S. Cl. 174—117 FF **4 Claims**



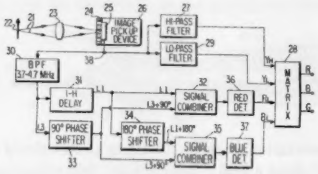
A flat power cable has flattened conductors with their long sections transverse to the long section of a cable. The conductors have a rope lay of six strands instead of the usual seven.

3,828,121
COLOR SIGNAL PRODUCING SYSTEM UTILIZING SPATIAL COLOR ENCODING AND COMB FILTERING

Jay Jerome Brandinger, Trenton; Dalton Harold Pritchard, Princeton, both of N.J.; Gordon Lyle Fredendall, and Alfred Christian Schroeder, both of Southampton, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,320
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST **14 Claims**

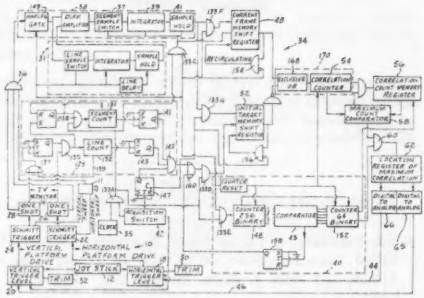
Colored light from a scene is spatially encoded onto a photosensitive surface by a striped spatial color encoding filter assembly including first and second superimposed encoding gratings having equal pitch encoding stripes disposed such that the stripes of the respective gratings are at substantially equal and opposite angles measured from a reference line in the plane of the filter. Scanning of the encoded image on the photosensitive surface produces a composite signal including first and second carrier wave components representative of first and second colors and having substantially the same frequency during a scanning interval. The carrier wave components are separated by comb filter apparatus for producing separate color representative signals.



3,828,122
TV AREA CORRELATION TRACKER

Walter J. McPhee, and Richard D. Sondergard, both of Mishawaka, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Continuation-in-part of Ser. No. 76,520, Sept. 29, 1970. This application Sept. 11, 1972, Ser. No. 287,940
Int. Cl. G01s 5/16; H04n 7/18
U.S. Cl. 178—6.8 **2 Claims**



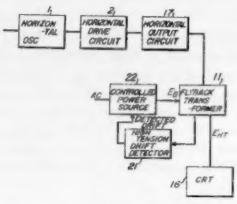
A means for tracking a target using a television monitoring system. A joy stick type control is used to position a rectangle of sampled video on a television monitor over a desired target. After pushing a target acquisition switch, the target is maintained within the rectangle by comparing a digital representation of the video signal for the rectangle with a smaller reference rectangle of the initially sampled video. The part of the larger rectangle that has the highest correlation with the reference rectangle is assumed to be the location of the target. Therefore, a feedback loop is used to reposition the larger rectangle until the point of maximum correlation is located at the center thereof. This comparison is made for each frame of video information of the television system. Simultaneously with the repositioning of the larger rectangle to centrally enclose the desired target, a camera of the television system is tending to reposition itself to locate the rectangle of sampled video within the center of the field of view. The physical repositioning of the camera is much slower than the electronic repositioning of the larger rectangle over the reference rectangle. The control loop that is used to maintain the target within the center of the field of view may be used to direct a missile or other conventional weapon toward the target.

3,828,123

REGULATED H.V. POWER ENERGY FOR A TELEVISION RECEIVER

Kohei Sato, Ikeda, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 31, 1972, Ser. No. 222,192
Claims priority, application Japan, Feb. 4, 1971, 46-4396
Int. Cl. H04n 3/18, 5/44
U.S. Cl. 178—7.3 R 9 Claims



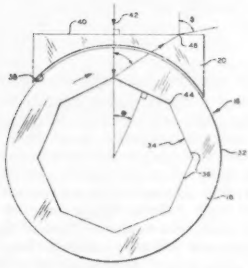
A television receiver in which a d.c. voltage applied from a controlled power source to a flyback transformer is controlled by a feedback circuit which feeds back a signal responsive to a drift of the high-tension output of the flyback transformer to the controlled power source so as to continuously maintain the high-tension output of the flyback transformer at a predetermined setting.

3,828,124

DECREASED ROTATION RATE SCANNING DEVICE

Richard C. Baum, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 254,217, May 17, 1972, abandoned. This application Mar. 16, 1973, Ser. No. 342,044
Int. Cl. G02b 17/00; G02f 1/34; H04n 3/08
U.S. Cl. 178—7.6 8 Claims



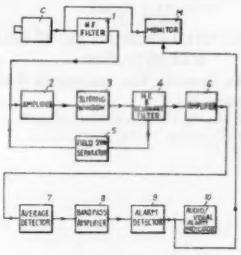
For use in a laser television projector or the like, a scanning system employing a rotary scanner which permits large angles to be scanned with reduced scanner rotational speeds. The rotary scanner is a hollow cylinder of refractive material having reflective internal surfaces defining a prism. A stationary refractor member surrounds a portion of the hollow cylinder and has a complementary curved surface in close proximity to the cylindrical outer surface thereof. The beam to be deflected passes through the refractor member before and after deflection by the reflective surfaces; thus the deflection angle is increased by refraction as the beam exits from the refractor into the surrounding air.

3,828,125

TELEVISION SYSTEMS

Donald Frederick Fagan, Flackwell Heath, and Rodney Barker Hale, St. Albans, both of England, assignors to Movalarm Limited, Iver, Buckinghamshire, England

Filed Nov. 16, 1972, Ser. No. 307,068
Claims priority, application Great Britain, Nov. 16, 1971, 53251/71
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 5 Claims



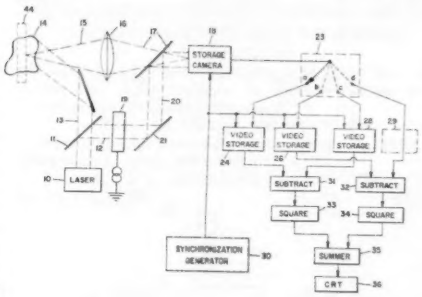
A television system is provided for the surveillance of premises or areas to be kept under watch, as a security precaution against intruders, etc. The system operates to provide an indication or alarm upon movement occuring in the area under surveillance. More specifically the system includes a television camera for viewing a normally static scene and means for detecting a change in the camera output video signal caused by a change in the scene, together with means responsive to the detected change for operating an alarm device or switching a television monitor to reproduce the camera output video signal.

3,828,126

REAL TIME INTERFEROMETRY

S. David Ramsey, Jr., Palo Alto, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Filed Apr. 13, 1973, Ser. No. 351,077
Int. Cl. G01b 9/02; H04n 5/76, 7/18
U.S. Cl. 178—6.8 40 Claims



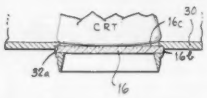
A real time holographic interferometer for measuring deformation of objects. Four independent holographic interference patterns are formed with on-axis object and reference beams. The first two interference patterns are of the object in a first physical state, e.g., in its first state of stress, or of a reference plane, and the second two interference patterns are of the object in a second physical state, e.g., in its second state of stress. The phase of the reference beam is shifted 90° for each exposure. A storage-type television camera is employed for

generating output signals that contain information from the four interference patterns. The first three output signals of the camera are stored in video recorders and are retrieved synchronously with the fourth camera output signals. Two signal pairs each consisting of a signal of the first and second states of stress of the object are combined and subtracted to form difference signals which are thereafter electronically squared and summed to generate a processed signal that contains the desired deformation information. The processed signal is utilized such as for driving a cathode ray tube.

3,828,127
DISPLAY DEVICE WITH AMBIENT LIGHT GRATICULE ILLUMINATOR

Joseph L. Lehmann, Sarasota, Fla., assignor to Weston Instruments, Inc., Newark, N.J.

Filed May 9, 1973, Ser. No. 358,650
Int. Cl. G02b *27/34*; **H01j** *29/34*
U.S. Cl. 178—7.84 **7 Claims**

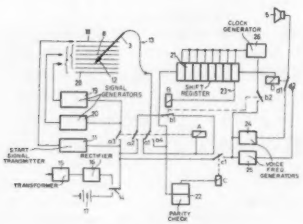


A device including a CRT is fitted with a graticule plate which provides grid lines that remain clear and retain proper contrast both when the CRT screen is observed directly through the graticule plate and when the CRT screen is photographed by a conventionally mounted CRT camera. The graticule plate does not need internal illumination, but is mounted outside the front face of the CRT device to admit ambient light through its side walls.

3,828,128
MANUAL INPUT DEVICE FOR DATA-PROCESSING SYSTEM AND THE LIKE

Jurgen Dethloff, Elbchaussee 239, Hamburg, and Wilfried de Beauclair, Am Oberfeld 13, Darmstadt, both of Germany

Filed Apr. 18, 1972, Ser. No. 245,170
Claims priority, application Germany, Apr. 20, 1971, 2119124
Int. Cl. H04n *1/00*
U.S. Cl. 178—18 **17 Claims**

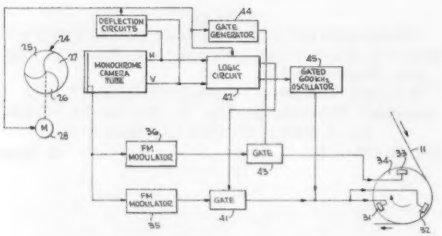


The device includes a data carrier having plural character fields, and a plurality of electrical leads extend in spaced, uniplanar parallel relation longitudinally across all of the character fields. First and second signal voltage generators generate two different respective signal voltages representing the binary code 0 and 1. A predetermined number of the leads are divided into first and second leads connected, respectively, to the first and second signal generators. The relative positions of the predetermined number of leads are interchanged, transversely of each field and transversely of the leads, so that, in each character field, the first and second leads are arranged in a different respective order transversely of the associated field to define a respective binary code characteristic of only the associated character field. An electrically conductive code detector or, preferably an electrically conductive stylus, is galvanically engageable directly and discretely with all the first and second leads in a character field to scan the same in a bit-serial sequence to provide, at the output of the code detector, a binary coded data signal respective to the scanned character field. One of the leads is a "start" lead and another lead is a "stop" lead. When a control switch is closed, the start lead is energized with a d.c. voltage, and activates the first and second signal generators, as well as connecting the code detector, such as the stylus, to a shift register and a parity check in the form of a binary counter. When the "stop" lead is contacted by the code detector, it deactivates the first and second signal generators and, if the number of 1 pulses is equal to a predetermined number, the parity check effects actuation of first and second voice frequency generators and a clock generator is activated to read out the shift register to selectively supply the voice frequency generator signals to a loudspeaker or the like in accordance with the scanned binary code.

3,828,129
POLYCHROME TELEVISION RECORDING AND PLAYBACK SYSTEM

George Bruck, Riaz, Switzerland; Yves C. Faroudja, Sunnyvale, and Philip Smaller, Palo Alto, both of Calif., assignors to Avco Corporation

Filed July 5, 1972, Ser. No. 269,103
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 CD **13 Claims**

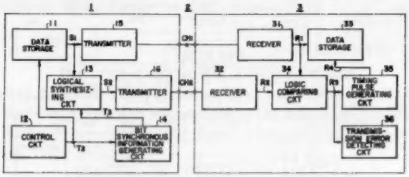


A system for recording and displaying a polychrome video signal is disclosed. A monochrome camera including a tricolor filter sequentially derives first and second chroma image fields and a third, basically luminance, image field. Three spaced rotating magnetic recording heads respectively respond to the three fields to apply signals to a tape moving past the heads in such a manner that diagonal tracks are recorded on the tape. Each diagonal track includes signals from the three sequentially derived fields. Odd numbered lines of the first chroma field are interspersed with even numbered lines of the second chroma field along a track. Superimposed on the lines of the two chroma fields are all of the lines from the luminance field. Chroma signals modulate a low frequency carrier, luminance signals modulate a high frequency carrier. The two carriers are recorded along the same track. In a preferred mode of execution, frequency modulation is used for chroma and luminance signals. In playback, the tape is swept past three rotating heads so that each track is read out three times. The chroma and luminance signals from each track are separated after being read out by each head. The chroma lines are processed so that, at any time, instant signals derived from a pair of adjacently numbered lines of successive chroma fields are simultaneously derived. Signals recorded along the same track from adjacently numbered lines from adjacent chroma fields are combined with the superimposed luminance signal to form an NTSC signal.

3,828,130
DATA TRANSMITTING SYSTEM

Taihei Yamaguchi, Kawasaki, Japan, assignor to Fuji Electric Company Limited, Kawasaki-shi, Kanagawa, Japan

Filed Apr. 13, 1973, Ser. No. 350,865
Claims priority, application Japan, Apr. 14, 1972, 47-37425
Int. Cl. H04l *7/06*
U.S. Cl. 178—69.5 R **5 Claims**

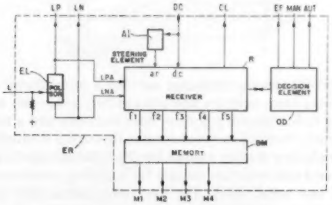


A data transmitting system disclosed here belongs to a method defined as a so-called serial data transmitting method for transmitting the data by converting it to a serial binary signal, and is composed as follows: data information is converted into a serial binary signal which is transmitted from the transmitting side to a first circuit of the signal transmission line at the same time an auxiliary signal formed by synthesizing logically the above data information and bit synchronous information synchronous therewith is transmitted to a second circuit of the signal transmission line, the data signals transmitted from the first and second circuits of the above signal transmission line and the auxiliary signal are compared logically so as to extract bit synchronous information at the receiving side; timing signals for extracting a bit are formed by the bit synchronous information signal; and the bit information of the data signal transmitted by way of the first circuit is, under the control of these timing signals extracted simultaneously with the measurement of the time interval of the timing signals and number signals, timing thereby detecting any error in the bit information of the data thus transmitted.

3,828,131
DIALLING DISCRIMINATOR

Gilbert Bocabeille, Meudon-La-Foret, and Rene Augris, Versailles, both of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Apr. 19, 1972, Ser. No. 245,411
Claims priority, application France, Apr. 19, 1971, 71.13776
Int. Cl. H04e *25/02*
U.S. Cl. 178—69 G **10 Claims**

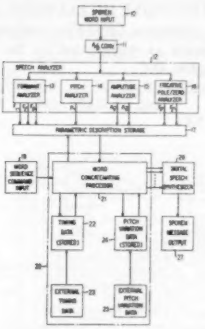


A dialling discriminator which may be connected to a receiver unit and which is adapted to distinguish between incoming decimal and arrythmic dialling signals. A first polarity sampling is made 130ms after the receipt of an incoming signal. If the sample is negative then decimal dialling is indicated since arrythmic dialling, by definition, is always positive at this point. If the sample is positive, however, no decision can be made and a second polarity sample is taken at 160ms. If this second sample is negative then arrythmic dialling is indicated, since same is always negative at this point while decimal dialling is always positive.

3,828,132
SPEECH SYNTHESIS BY CONCATENATION OF FORMANT ENCODED WORDS

James Loton Flanagan, Warren; Lawrence Richard Rabiner, Berkeley Heights, and Ronald William Schafer, New Providence, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 30, 1970, Ser. No. 85,660
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 **13 Claims**



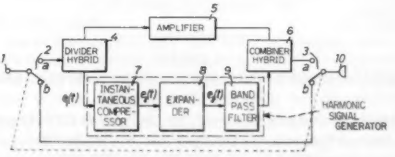
Audio response units that select speech sounds, stored in analog or coded digital form, as the excitation for a speech synthesizer are widely used, for example in telephone audio announcement terminals. The speech produced by most units is noticeably artifical and mechanical sounding.

According to this invention, human speech is analyzed in terms of formant structure and coded for storage in the unit. As the individual words are called for, a stored program assembles them into a complete utterance, taking into account the durations of the words in the context of the complete utterance, pitch variations common to the language, and transitions between voiced portions of the speech. The result is a more natural sounding synthetic utterance.

3,828,133
SPEECH QUALITY IMPROVING SYSTEM UTILIZING THE GENERATION OF HIGHER HARMONIC COMPONENTS

Hikoichi Ishigami; Seishi Kitayama, and Akira Sato, all of Tokyo-To, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-To, Japan

Filed Sept. 21, 1972, Ser. No. 290,898
Claims priority, application Japan, Sept. 23, 1971, 46-73816; Oct. 25, 1971, 46-84469
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA **8 Claims**



A speech quality improving system for a band-limited voice signal, comprising a branching circuit for dividing the band-limited voice signal into two branched signals each having the same waveform as the band-limited voice signal, a higher harmonic signal generator for generating higher harmonic com-

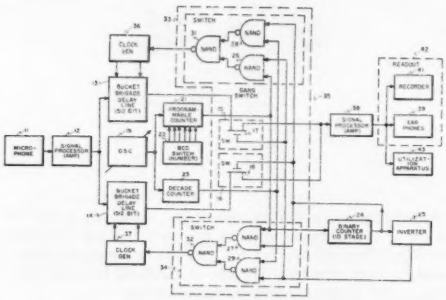
ponents of one of the two branched signals, and a combining circuit for combining the other of the two branched signals with the generated higher harmonic components to provide a combined voice signal having an improved speech quality realized by increasing the higher harmonic components of the band-limited voice signal. The higher harmonic generator comprises a cascade combination of an instantaneous compressor and a level range expander having reciprocal power characteristics of the compression ratio of the instantaneous compressor.

3,828,134

DEVICE FOR CHANGING PITCH OF AN AUDIO SIGNAL TO IMPROVE INTELLIGIBILITY

Clella Dildy, Jr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 9, 1973, Ser. No. 377,878
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA **19 Claims**



A helium speech decoder of the pitch scaler type is disclosed as including a pair of bucket brigade analog delay lines which are timely loaded with the electrical signal equivalent of human voice signals that are effectively supplied thereto by an electroacoustical transducer.

The respective frequencies of signals unloaded by said bucket brigade delay lines are controlled by a pair of clock generators which drive said bucket brigade delay lines at different predetermined frequencies in response to the output signals from oscillator driven Number programmed and decade counters. The timely and alternate loading (and unloading) of said bucket brigade delay lines is effected by a binary counter, the state of which changes periodically in response to the aforesaid Number programmed counter in such manner as to acutate and alternate switch means in order to properly effect the driving of said pair of clock generators and, hence, shift said bucket brigade delay lines at their predetermined respective frequencies, as well as effect the timely unloading thereof in synchronism with the alternation thereof. The unloaded signals from said bucket brigade delay lines are then indicated by any suitable readout apparatus and/or otherwise used by any other compatible utilization apparatus.

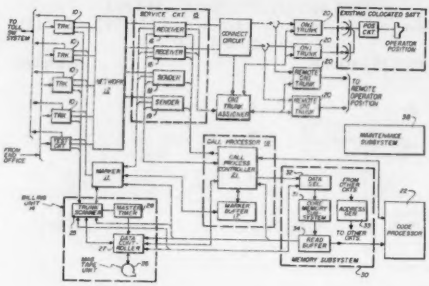
3,828,135

ARRANGEMENT FOR ASSEMBLING AN INITIAL ENTRY IN A BILLING BUFFER

Richard A. Padgett, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 2, 1973, Ser. No. 320,214
Int. Cl. H04m *15/10*
U.S. Cl. 179—7 R **2 Claims**

In the described centralized automatic message accounting system, a multi-entry format formed of an intial entry, an answer entry and a disconnect entry is used to record call records. The data comprising the initial entry is accumulated in two different parts of the system, with some data being stored in a call processor call store and some data being stored



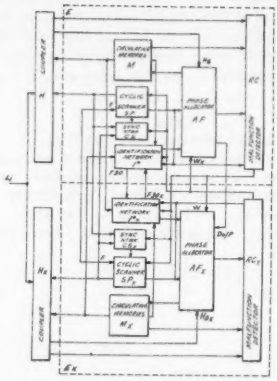
in an initial entry pre-store. An arrangement is disclosed for assembly the data from these two sources into a billing buffer, to complete one initial entry.

3,828,136

TIME DIVISION TELEPHONE SWITCHING EXCHANGE

Aldo Perna, Varese, and Giuseppe Valbonesi, Villaggio Luicana Vighignolo, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens s.p.a., Milan, Italy

Filed June 15, 1972, Ser. No. 263,124
Claims priority, application Italy, June 18, 1971, 26040/71
Int. Cl. H04j *3/14*
U.S. Cl. 179—15 BF **2 Claims**



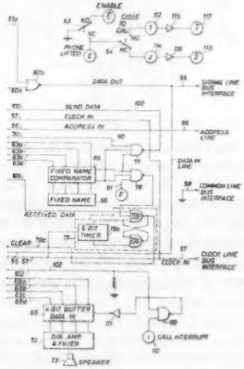
A TDM telephone exchange serving a multiplicity of subscriber lines has a primary and a secondary processor each including a caller memory, a responder memory and a monitoring memory, stepped in synchronism through a multiplicity of phases including service phases for the establishment of a connection and conversation phases for enabling communication between two subscribers. The associated subscriber lines are periodically scanned in successive memory cycles; the address of any such subscriber found to be in the process of initiating the call, if not yet entered in a phase of the caller or the responder memory of either processor as determined during a service phase, is entered in the first available conversation phase of either caller memory whereupon the address of the called subscriber is registered in the corresponding phase of the associated responder memory to let the conversation proceed under the control of appropriate entries in the monitoring memory of the same processor. If the first vacant phases

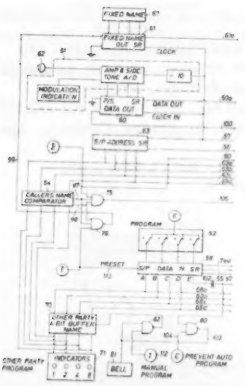
of the two caller memories coincide, preference is given to the memory of the first processor. If a fault develops in either processor, the other one is used on all calls. With subscriber lines arranged in groups along common branches of two main signal paths, entry in a vacant phase of either caller memory is possible only if the concurrent phases of the caller and responder memories of the other processor do not carry the address of another subscriber of the same group; otherwise, the address of the new caller is transferred to the next available phase not subject to this restriction.

3,828,137
DIGITAL COMMUNICATION SYSTEM

Leo G. Monford, Jr., Texas City, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 28, 1972, Ser. No. 310,034
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 AT **12 Claims**



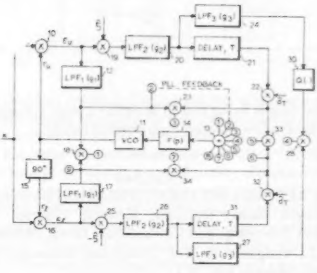


A digital communication system for parallel operation of 16 or more transceiver units with the use of only four interconnecting wires. A remote synchronization circuit produces unit address control words sequentially in data frames of 16 words. Means are provided in each transceiver unit to decode calling signals and to transmit calling and data signals. The transceivers communicate with each other over one data line. The synchronization unit communicates the address control information to the transceiver units over an address line and further provides the timing information over a clock line. A reference voltage level or ground line completes the interconnecting four wire hookup.

3,828,138
COHERENT RECEIVER EMPLOYING NONLINEAR COHERENCE DETECTION FOR CARRIER TRACKING

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; William C. Lindsey, Pasadena, and Marvin K. Simon, La Canada, both of Calif.

Filed May 10, 1973, Ser. No. 359,039
Int. Cl. H04b *1/06*
U.S. Cl. 179—15 BC **4 Claims**



The concept of nonlinear coherence employed in carrier tracking to improve telecommunications efficiency is disclosed. A generic tracking loop for a coherent receiver is shown having seven principle feedback signals which may be selectively added and applied to a voltage controlled oscillator to produce a reference signal that is phase coherent with a received carrier. An eighth feedback signal whose nonrandom components are coherent with the phase detected and filtered carrier may also be added to exploit the sideband power of the received signal. A ninth feedback signal whose nonrandom components are also coherent with the quadrature phase detected and filtered carrier could be additionally or alternatively included in the composite feedback signal to the voltage controlled oscillator.

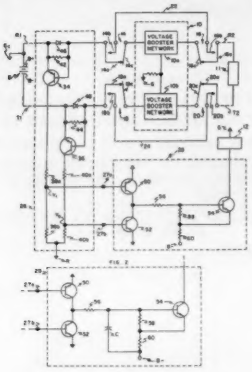
3,828,139
DISCONNECT CIRCUIT FOR TELEPHONE SYSTEMS

Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Oct. 24, 1972, Ser. No. 299,924
Int. Cl. H04m *3/24*; **H04b** *3/46*
U.S. Cl. 179—16 F **14 Claims**

A circuit for automatically disconnecting circuitry such as voltage booster circuitry from a subscriber line to prevent such circuitry from interfering with the measurement of voltage and current on that line. The circuit includes booster disconnect switches which, in a first operative state, connect the voltage booster circuitry in aiding relationship to current flow through the subscriber line and which, in a second operative state, disconnect the voltage booster circuitry from the line and substitute therefore one or more current bypass conductors. A control circuit responsive to both the voltage across and current through the line controls the disconnect switches, as required, to establish the first operative state

thereof when the subscriber line is being used by a subscriber and to establish the second operative state thereof when the



subscriber line is being tested in either a high voltage-low current mode or a low voltage-high current mode.

3,828,140

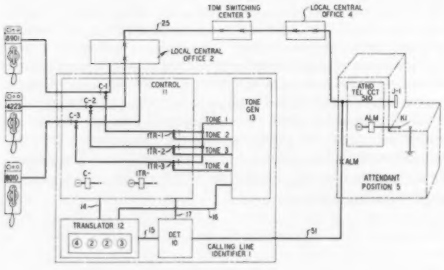
CALLING LINE IDENTIFICATION SYSTEM

Leslie Lewis Blane, Rumson; Kenneth Charles Bottonari, Madison Township, and Edward Earl Lewis, Middletown, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1972, Ser. No. 317,635

Int. Cl. H04m *1/56*

U.S. Cl. 179—18 FH **15 Claims**



A calling line identification system arranged for identifying calling ones of a number of telephone stations connectable through the telephone switching network with remotely located called telephone stations. A called party starts the identification sequence by coupling the incoming transmission path of a calling telephone station with the calling line identification system and transmitting an initiate identity signal thereto. The initiate identity signal enables the calling line identification system to sequentially remove groups of the telephone stations from across their line facilities and simultaneously apply bursts of distinctive tone signals to each opened line facility. Ones of the tone signals received over the incoming transmission path enable the calling line identification system to effect an identity of an anonymous calling telephone station connected with the remote called telephone station.

3,828,141

SYSTEM FOR DETECTING DIAL-GENERATED AND PUSHBUTTON-GENERATED SELECTION PULSES

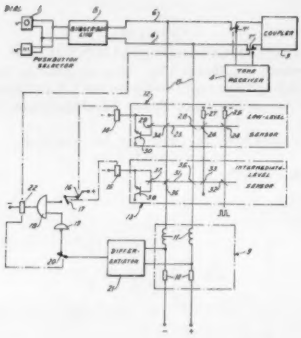
Franco De Marco, and Carlo A. Manghi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni SIEMENS S. p. A., Milan, Italy

Filed June 20, 1972, Ser. No. 264,494

Claims priority, application Italy, June 22, 1971, 7241/71

Int. Cl. H04m *1/50*

U.S. Cl. 179—84 VF **7 Claims**



In order to discriminate between true and spurious key signals in a telephone system in which a d-c subscriber line is independently closable by separate hook switches in series with a dial-type and a pushbutton-type digit selector, an exchange serving this line includes a low-level current sensor and an intermediate-level current sensor working into a coincidence circuit. In the presence of an output from the intermediate-level sensor with simultaneous absence of an output from the low-level sensor, the coincidence circuit connects the line wires across a voice-frequency tone receiver unless a transient condition is simultaneously indicated by the output of a differentiator connected across a pair of resistors in a branch circuit containing the two level sensors. A relay actuated by the output of the coincidence circuit disables the differentiator upon the detection of a key signal.

3,828,142

ELECTRICAL HEARING AID

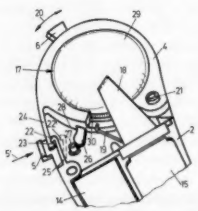
Gerhard Buttner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Apr. 18, 1973, Ser. No. 352,179

Claims priority, application Germany, Apr. 24, 1972, 2219970

Int. Cl. H04r *25/00*

U.S. Cl. 179—107 R **2 Claims**



An electrical hearing aid is operated by the current of a current source provided in the casing of the hearing aid in a holder movable therein to exchange the source. The operating current is switched on and off by the movement of the holder

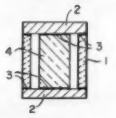
and the closing or opening of contacts. An element effective between the holder and the casing snaps in rest locations in the switched on and switched off positions of the holder. The invention is particularly characterized by the provision of a closing device located between the holder and the casing and movable in and out to limit the movement of the holder at most to the switching operation and at least to an opening which just about prevents the removal of the battery.

3,828,143

PIEZOELECTRIC END CAPPED CYLINDER ASSEMBLY FOR USE TO THE RADIAL-MODE RESONANCE FREQUENCY

Allan C. Tims, and Theodore A. Henriquez, both of Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 21, 1972, Ser. No. 265,042
Int. Cl. H04r *17/00*
U.S. Cl. 179—110 A **3 Claims**



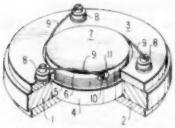
A cylindrical end capped piezoelectric transducer element provided with a concentrically mounted interior post cemented to the end caps. The structure prevents resonance of the end caps to thus provide uniform, relatively flat response to the radial mode resonance frequency.

3,828,144

VIBRATION ABSORBING SUPPORT FOR LOUDSPEAKER VOICE COIL BOBBIN

Isao Yamamuro, and Akio Obuchi, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed June 14, 1973, Ser. No. 370,107
Claims priority, application Japan, June 20, 1972, 47-72178
Int. Cl. H04r *9/04*
U.S. Cl. 179—115.5 VC **8 Claims**



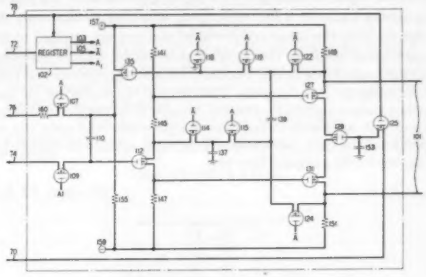
The suspension wires extending tangentially to the outer periphery of the coil bobbin which is positioned within a cylindrical air gap of the magnetic circuit of a loudspeaker partially defined by an annular magnetic plate forming a portion of that circuit and a cylindrical pole centered within the plate, are fixed at their outer end to the magnetic plate and are fixed at their inner end to the periphery of the bobbin by vibration absorbing members. The vibration absorbing members may comprise silicone rubber blocks having grooved outer surfaces to receive ends of the wires.

3,828,145

COMMUNICATION SYSTEM HYBRID BALANCE ARRANGEMENT

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 21, 1973, Ser. No. 343,272
Int. Cl. H04m *1/58*
U.S. Cl. 179—170 NC **21 Claims**



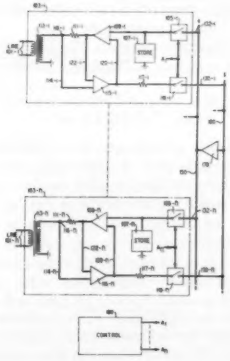
A time division communication system wherein a plurality of time slots occurs in repetitive frames includes a plurality of lines, an incoming time division bus and an outgoing time division bus. Each line has an associated hybrid circuit that comprises balancing apparatus for minimizing the portion of the incoming bus signal returned to the outgoing bus through the hybrid circuit. Adjustment of the balance for a selected hybrid is done during the plurality of time frames in a predetermined time interval. The polarities of the incoming signal to the hybrid and the outgoing signal from the hybrid are detected in each frame. A first type signal is generated when the detected polarities are the same and a second type signal is generated when the detected polarities are different. Responsive to the sequence of first and second type signals, a control signal is produced which is applied to the balancing apparatus of the selected hybrid circuit.

3,828,146

TIME DIVISION CONFERENCE HYBRID CIRCUIT

Theras Gordon Lewis, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 22, 1973, Ser. No. 343,825
Int. Cl. H04m *1/58*
U.S. Cl. 179—170 NC **6 Claims**



In a time division communication system a conference connection among a plurality of stations is established utilizing

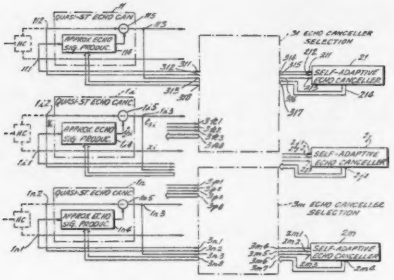
station associated hybrid circuits connected to an incoming common bus and an outgoing common bus in an assigned conference time slot. It is required that each station receive the outgoing signals of the other conferenced stations but not its own outgoing signal while only the station's own outgoing signal is applied to the outgoing bus in the assigned time slot. Each hybrid circuit stores the sum of the conferenced signals received from the incoming bus in the assigned time slot. The associated station's own outgoing signal in the stored conference signal is canceled by a signal derived from the station outgoing signal in a first difference amplifier so that only the signals from the other conferenced stations are applied to the associated station. The other conferenced station outgoing signals appearing at the associated station are prevented from returning to the outgoing bus through cancellation of said other station signals by a signal derived from the first amplifier output in a second difference amplifier whereby only the associated station's own outgoing signal is applied to the outgoing bus in the assigned time slot.

3,828,147

ECHO CANCELLER ARRANGEMENT COMPRISING QUASI-STATIC ECHO CANCELLERS AND A SMALLER NUMBER OF SELF-ADAPTIVE ECHO CANCELLERS

Kazuo Ochiai; Takashi Araseki, and Yasuo Kato, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 279,468, Aug. 10, 1972, abandoned. This application Feb. 20, 1973, Ser. No. 333,469
Claims priority, application Japan, Feb. 18, 1972, 47-16500
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.2 **7 Claims**



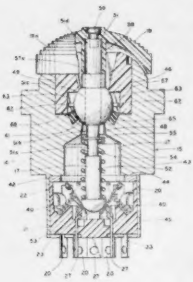
An echo canceller arrangement for a plurality of channels comprises an equal plurality of quasi-static echo cancellers for the respective channels and a smaller number of self-adaptive echo cancellers which are coupled with a group of quasi-static echo cancellers for an equal smaller number of selected channels. Channel selection is successively varied in such a manner that various groups of all quasi-static echo cancellers are successively coupled with the self-adaptive echo cancellers. One of the echo path models retained by each self-adaptive echo canceller and by the quasi-static echo canceller coupled with the last-mentioned self-adaptive echo canceller is rewritten with reference to the other when the above-mentioned other model gives a significantly worse approximation of the characteristics of the concerned actual echo path than the above-mentioned one model.

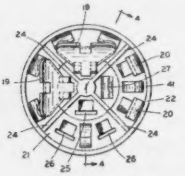
3,828,148

MULTI-POSITION ELECTRICAL SWITCH AND SPRING BIASING MEANS FOR UNIVERSAL-TYPE ACTUATOR

John O. Roeser, Arlington Heights, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Continuation-in-part of Ser. No. 290,482, Sept. 20, 1972, abandoned. This application Apr. 20, 1973, Ser. No. 352,900
Int. Cl. H01h *25/04, 21/80*
U.S. Cl. 200—6 A **23 Claims**





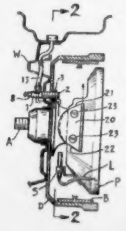
A multi-position electrical switch assembly with an elongated actuator means contains resilient means normally biasing the actuator means to a center off position. The actuator means is pivotally movable between a center off position to a plurality of switch on positions whereby a selected switch is actuated. The interior of the casing is hermetically sealed by an O-ring disposed below the equatorial line of the actuator means ball and socket joint of the housing.

3,828,149

MECHANICALLY-RESETTING TIRE DEFLATION SIGNALLING SYSTEM

Harry C. Winther, Glen Mills, Pa., assignor to Walter J. Winther; Charles R. Winther; William J. Winther and Shirley M. Winther, part interest to each

Filed Feb. 15, 1973, Ser. No. 332,775
Int. Cl. H01h *35/00*
U.S. Cl. 200—61.25 **4 Claims**



Apparatus including a pressure differential responsive valve for connection with the interior of a vehicle tire and an actua-

tor responsive thereto for energizing a signalling circuit or the like on loss of tire pressure, combined with a camming device for resetting the actuator after the tire pressure has been restored to a predetermined value, together with visual signalling means carried by the vehicle wheel affording indication of deflation independently of the signalling circuit.

3,828,150

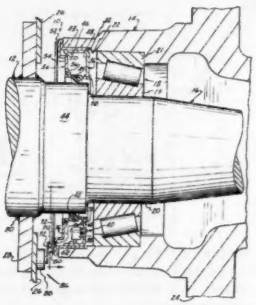
WHEEL SPEED SENSOR FOR AN ANTI-SKID VEHICLE BRAKING SYSTEM

Harold C. Hubbard, Lansing, Mich., and Joseph J. Strbik, Tinley Park, Ill., assignors to Motor Wheel Corporation, Lansing, Mich.

Continuation of Ser. No. 210,761, Dec. 22, 1971, abandoned. This application Sept. 18, 1972, Ser. No. 289,946

Int. Cl. B60t *8/12*

U.S. Cl. 200—61.46 **16 Claims**



A wheel speed sensor for controlling an anti-skid vehicle braking system wherein the sensor is associated with a wheel hub mounted for rotation on a spindle. The sensor has a housing received on the hub with a switch pivotally mounted therein. One of the contacts of the switch is connected to an electrically conductive ring carried by the housing for rotation therewith and adapted to engage a brush assembly mounted in fixed relation to the spindle.

3,828,151

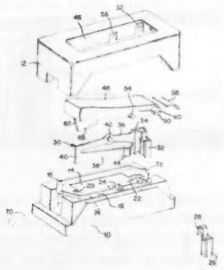
SNAP SWITCH ACTUATOR

Edward Dennman Bunnell, Palm Harbor, and Stuart L. Parsons, Belleair-Beach, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 25, 1973, Ser. No. 364,156

Int. Cl. H01h *13/36*

U.S. Cl. 200—67 DA **11 Claims**



A method and apparatus for actuating a contact carrying snap-over center spring member in an electrical switching device is disclosed. The spring member includes a stressed contact carrying arm which assumes either of two oppositely directed, bowed rest positions and at least one stressing arm crimped to be shorter than the contact carrying arm. The spring member is mounted in cantilever fashion with the contact positioned for cooperative interaction with a fixed contact. The actuator includes camming means acting in the plane of the spring against an area near the free end of the contact carrying arm of the spring to force it from one bowed rest position to its opposite bowed position.

3,828,152

REGULATOR FOR CENTRALIZED REFRIGERATING

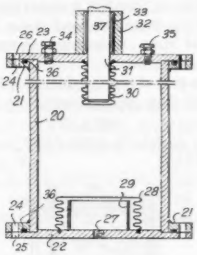
Pierre Charmeil, Montreuil, and Michel Debieuvre, Nogent/Marne, both of France, assignors to S.A.R.L. "Constructions Isothermiques Bontami," Vincennes, France

Filed Apr. 17, 1972, Ser. No. 244,580

Claims priority, application France, Apr. 23, 1971, 71.14522

Int. Cl. H01h *35/40*

U.S. Cl. 200—83 **9 Claims**



A pressure or flow regulator for food refrigeration systems and installations for distributing fluid under pressure.

The regulator is particularly intended for centralized refrigeration systems having a group of compressors mounted in parallel and delivering fluid refrigerant to refrigerated cabinets which are periodically defrosted. The regulator has two interconnected bellows in an enclosure filled with a fluid having a low coefficient of expansion. One of the bellows is deformable by changes in pressure at the low pressure side of the compressors, and resulting deformations in this bellows are transmitted by the fluid in the enclosure to the other bellows, which actuates micro-contacts controlling the starting or stopping of the compressors.

3,828,153

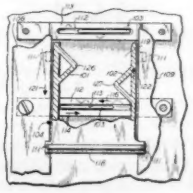
PAPER WIDTH-RESPONSIVE SWITCH APPARATUS FOR PRINTERS

Arthur A. Hagstrom, Hoffman Estates, and Takeshi Yamashita, Chicago, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Feb. 8, 1973, Ser. No. 330,550

Int. Cl. H01h *15/00*

U.S. Cl. 200—153 LA **6 Claims**



A system for adjusting a printer to accommodate different widths of paper includes a fixed sprocket wheel and a slidable

sprocket wheel for engaging perforations in the margin of the paper. The slidable sprocket wheel is positively coupled to a slidable trolley which has a pair of opposed but spaced cams projecting therein which operate individually and sequentially on a row of switches by shifting followers projecting from each individual switch.

The present system is disclosed as being used with an electrostatic raster printer in which a series of nozzles direct streams of ink onto a sheet of paper to thereby print on the paper. The streams of ink are controlled by the switches to convert to a non-printing, or "gun-down," mode sequentially as the switches are shifted to the first condition. As the switches are shifted to the second condition, the streams of ink are converted sequentially to a printing mode. In this way, those streams of ink which will impinge upon the paper are retained in a printing mode and those streams of ink which will miss the edge or margin of the paper will be placed in a non-printing or gun-down mode.

3,828,154

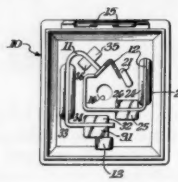
VARIABLE ELECTRONIC COMPONENT SWITCH

John H. Fabricius, Stamford, and John P. Maher, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 260,293, June 6, 1972, Pat. No. 3,760,321. This application Feb. 26, 1973, Ser. No. 335,617

Int. Cl. H01h *21/82*

U.S. Cl. 200—153 LB **1 Claim**



In a variable network loudness and/or tone control, a mechanism is disclosed for use as an "off-on" switch. The switch is actuated by rotating the same shaft that controls the loudness or volume.

3,828,155

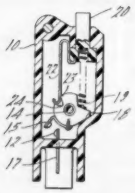
MOMENTARILY CLOSING SWITCH APPARATUS

Arnold G. Adams, Troy, Mich., assignor to Theodore E. Fiddler, Birmingham, Mich.

Filed Mar. 29, 1973, Ser. No. 345,978

Int. Cl. H01h *13/52*

U.S. Cl. 200—160 **7 Claims**



A switch apparatus for momentarily closing its contacts to complete a circuit with motion in one direction having at least one fixed contact, a rocker arm, at least one moving contact on the rocker arm, a pawl for moving the rocker arm to swing the moving contact against the fixed contact, an actuator for moving the pawl and spring means resiliently displaceably urging the rocker arm and the actuator-pawl to their unactuated positions with the contacts open. The actuator-pawl moves the rocker arm to move the movable contact against the fixed contact to close a circuit. A cam engages the pawl immediately after the pawl has moved the rocker arm to close the contacts. The cam then moves the pawl off the rocker arm whereupon the spring means reversely move the rocker arm opening the contacts with the actuator-pawl still in the actuated position.

3,828,156

WELDING MACHINE

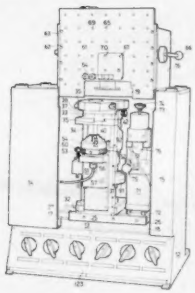
John Arthur Fulks, Hemel Hempstead, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed July 13, 1973, Ser. No. 378,814

Claims priority, application Great Britain, July 20, 1972, 33901/72

Int. Cl. B23k *9/00*

U.S. Cl. 219—60 A **4 Claims**



A machine for use in the welding of a pipe to a pipe-end fitting comprising several carriages, mounted on a main frame, and capable of receiving a pipe and a pipe-end fitting and aligning them in an abutting relationship one to the other and relative to an orbital welding head which is mounted from one of the carriage means. The machine is particularly adapted for batch work in that after setting up for the welding of the first assembly repetitive work can then be carried out with a reduced number of setting up adjustments for subsequent welding of assemblies.

3,828,157

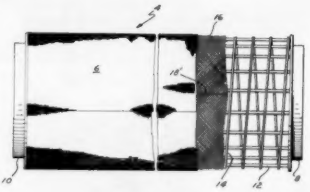
METHOD OF SEAMING WIRE CLOTH

David G. Minick, Westfield, Mass., assignor to The Sinclair Company, Holyoke, Mass.

Filed Feb. 26, 1973, Ser. No. 335,889

Int. Cl. B23k *31/06*

U.S. Cl. 219—67 **5 Claims**



Method of seaming metal wire fabric or screen of fine mesh onto a cylindrical support structure, such as a dandy roll or cylinder mould by securing to the structure a first metal wire cloth under layment at least along the seaming site of the fabric. The fine mesh fabric is then wrapped around the structure and tensioned with its ends held in registered, abutting relationship. The fine wire fabric is spot welded along and adjacent its abutting edges to the metal cloth. The welding pulses are controlled as to both shape and number to fuse the two

wire materials together without overheating various gauges of metal fabric.

3,828,158

METHOD OF TESTING SPIRAL-WELDED SEAL TUBES

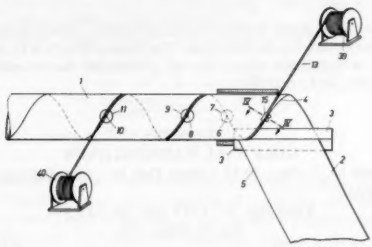
Adalbert Sablotny, Rehdeicke, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Division of Ser. No. 72,882, Sept. 16, 1970, Pat. No. 3,696,226, which is a division of Ser. No. 769,579, Oct. 22, 1968, Pat. No. 3,557,335. This application July 12, 1972, Ser. No. 271,240

Claims priority, application Germany, Oct. 27, 1967, 1652938

Int. Cl. B23k *1/18*

U.S. Cl. 219—62 **1 Claim**



Method of producing or testing with a welding or testing instrument welded spiral-seamed tubes formed of a steel band, which comprises rolling a steel band in a continuous spiral so as to form a rotating tube-shaped body; placing on the steel band at a constant spacing from an edge of the steel band extending toward a given welding location thereon, a premagnetized tape containing a ferromagnetic material adhering to the steel band and carrying a marking line disposed parallel to the edge of the steel band; sensing the marking line and regulating in accordance therewith the orientation of at least one of the welding and testing instruments with respect to the edge of the steel band so that the instrument and the given welding location are momentarily in registry as the tube-shaped body rotates; and withdrawing the premagnetized tape from the steel band after the steel band edge of the tube-shaped body has rotated past a second one of the instruments in the travel direction of the steel band edge; and apparatus for carrying out the method.

3,828,159

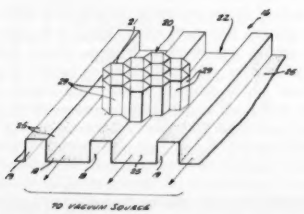
LASER CUTTING SURFACE

Robert M. Zoot, West Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 3,665, Jan. 19, 1970, abandoned. This application Oct. 8, 1971, Ser. No. 187,712

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 LM **9 Claims**



A table surface upon which a workpiece is placed to be cut by a laser beam is constructed in a manner not to be affected by the laser beam and to eliminate adverse effects to the workpiece which can be caused by the setting up of standing waves and/or stray reflections from the table surface.

3,828,160

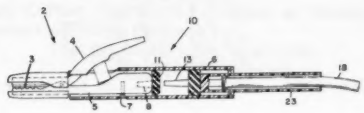
ELECTRODE HOLDER WITH POWER DISCONNECT

William S. Greer, San Antonio, Tex., assignor to Courtenay W. McAlpin, San Antonio, Tex., a part interest

Filed Mar. 22, 1973, Ser. No. 343,700

Int. Cl. B23k *9/28*

U.S. Cl. 219—141 **1 Claim**



An electrode holder has a plug and socket type of electrical connection mounted inside the insulated handle portion of the electrode. The plug and socket are mounted for relative sliding movement inside the handle.

3,828,161

FOR HEATING FLUIDS BY MEANS OF GAS PERMEABLE HEAT GENERATING MEMBERS

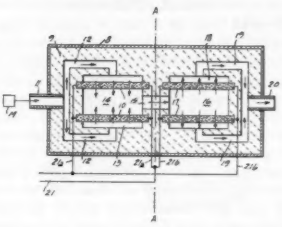
Takeshi Yamaguchi, Tokyo, Japan, assignor to Ernest K. Cleland, Milwaukee, Wis.

Filed June 6, 1972, Ser. No. 260,133

Claims priority, application Japan, July 20, 1971, 46-54014

Int. Cl. H05b *3/12*; **F24h** *3/04*

U.S. Cl. 219—382 **4 Claims**



Apparatus for heating a fluid has first and second heating chambers each having an inlet and an outlet. At least one passage connects the first heating chamber to its inlet and a fluid-permeable electrically energized heat generating member is interposed between each said passages and the first heating chamber. The outlet from the first chamber leads to the inlet of the second chamber. At least one passage connects the second heating chamber to its inlet. A fluid-permeable electrically energized heat generating member is interposed between each of said passages and the second heating chamber.

3,828,162

METHOD FOR HEATING CORROSIVE GASES WITH ARC HEATER

Calvin B. Holden, Doylestown, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

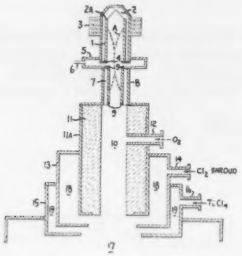
Division of Ser. No. 35,004, May 6, 1970, Pat. No. 3,743,781, which is a division of Ser. No. 683,839, Nov. 17, 1967, Pat. No. 3,558,274, which is a continuation-in-part of Ser. No. 400,644, Oct. 1, 1964, abandoned. This application Sept. 28, 1972, Ser. No. 293,182

Int. Cl. H05b *7/18*

U.S. Cl. 219—383 **10 Claims**

Corrosive gases, such as air, oxygen, carbon monoxide and carbon dioxide, are heated in an electric arc gas heater by

passing the gas to be heated through the arc heater and in contact with an electric arc established between the cathode and anode electrodes thereof. At least one electrode contains less



than about 0.0005 volume percent of voids of at least 0.019 inch in any dimension in the area of the electrode eroded by arc operation. Ultrasonic testing is used to determine the void content of the electrodes.

3,828,163

ELECTRIC OVEN

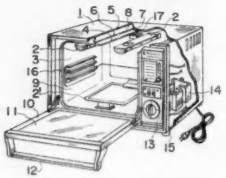
Keizo Amagami, Neyagawa; Toshii Tsugeki, Takatsuki; Yasuo Ogo, Kawanishi; Yoshinori Mitani, Minoo; Hiromutsu Ueda, Ibaragi; Takeo Nishida, Ikeda, and Atsuo Ono, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 29, 1973, Ser. No. 327,471

Claims priority, application Japan, Feb. 31, 1972, 47-11639

Int. Cl. F27d *11/02*

U.S. Cl. 219—413 **12 Claims**



An electric oven convenient for general purposes capable of selectively performing the convection heating in which the variational temperature width is very small and foods can be cooked with no scorching, the infrared radiation heating in which the temperature fluctuation is large and scorching is formed on the cooked foods, and the fermenting heating for raising bread with yeast, the oven comprises a controlling means including a thyristor, etc. and a combination of a gate circuit means for said thyristor and a temperature detecting means.

3,828,164

COOKING DEVICE WITH AN ELECTRICAL TEMPERATURE CONTROL

Karl Fischer, Am Gansberg, and Wolfgang Niehaus, both of Oberderdingen, Germany, assignors to said Fischer, by said Neihaus

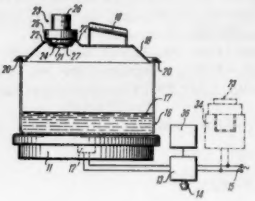
Filed Nov. 21, 1972, Ser. No. 308,507

Claims priority, application Germany, Dec. 10, 1971, 2161371

Int. Cl. F27d *11/02*

U.S. Cl. 219—431 **12 Claims**

A regulator for an electric or gas hot plate comprises a freely movable control unit which is fixed to or can be placed upon a pan lid. The control unit includes a battery powered radio transmitter which transmits a signal when steam rises in the pan and is condensed in the control unit, the latter including a thermally responsive switch for switching on the trans-



mitter. The signal is received by a receiver which controls a power switch for the hot plate. The battery can be a rechargeable accumulator which can be re-charged via an inductive coupling and a rectifier.

3,828,165

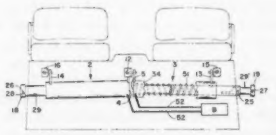
GOLF BALL WARMING OVEN

Joseph M. Collins, 3115 Tawny Oak Dr., San Antonio, Tex. 78230

Filed Mar. 27, 1973, Ser. No. 345,351

Int. Cl. H05b *3/06*

U.S. Cl. 219—521 **6 Claims**



A golf ball warming oven is constructed of a tubular housing surrounded by an insulating cover. The oven is mounted over the exhaust manifold on a gas powered golf cart. For use on electric powered golf carts, the electric resistance coils are wrapped around the housing underneath the insulated cover.

3,828,166

CASH REGISTER INTENDED FOR SAFE AND FAST OPERATION DURING RECEIPTION AND ISSUE OF BANKNOTES AND COMPARABLE DOCUMENTS

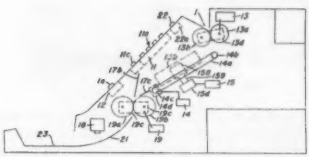
Sven Lissol Johansson, and Leif Lundblad, both of Stockholm, Sweden, assignors to Norob System AB, Stockholm, Sweden

Filed Sept. 11, 1972, Ser. No. 287,685

Claims priority, application Sweden, Sept. 14, 1971, 11613/71

Int. Cl. G07g *1/00, 3/00;* **G07d** *1/00*

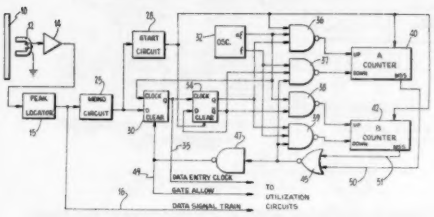
U.S. Cl. 235—7 A **5 Claims**



A cash register for safe and fast handling of exact amounts of banknotes. Motive operated conveyors feed documents into and one at a time from a banknote bundle storing compartment for each banknote denomination. A keyboard con-

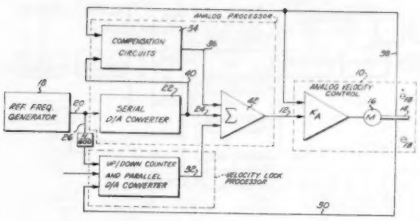
trol effects the discrete delivery as well as provides safety controls for alarm conditions.

3,828,167
DETECTOR FOR SELF-CLOCKING DATA WITH VARIABLE DIGIT PERIODS
William C. Goldfarb, Ithaca, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,467
Int. Cl. G11b *5/00*
U.S. Cl. 235—61.11 A **13 Claims**



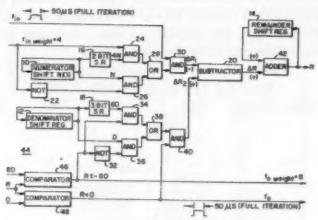
A data detector for eliminating spurious pulses from a train of self-clocking data signals capable of operation over an extremely wide range of digit intervals. Deletion period circuitry including a pair of reversible counters operated simultaneously in opposite directions for establishing successive deletion periods as a function of the actual length of the most recent digit interval.

3,828,168
CONTROLLED VELOCITY DRIVE
Gerald F. O'Callaghan, Kenosha, and Donald D. Woelz, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 31, 1972, Ser. No. 240,221
Int. Cl. H02p *5/00*
U.S. Cl. 235—150.1 **56 Claims**



A control for a controlled velocity drive having a driven load includes a generator for generating a reference pulse train wherein each pulse is indicative of a desired incremental position of the load and the frequency of the pulses is indicative of a desired velocity of the load, first sensing means for sensing the actual position and velocity of the load and generating a second pulse train wherein each pulse is indicative of an actual incremental position of the load and the frequency of the pulses is indicative of the actual velocity of the load, and an up-down counter for digitally summing the pulses of the reference pulse train and the pulses of the second pulse train and generating a position error signal. The control system further includes means for converting the reference pulse train to an analog base velocity signal which has a magnitude indicative of the desired velocity of the load and second sensing means for sensing the actual velocity of the load and generating an analog velocity signal indicative thereof. A compensation circuit is provided responsive to the analog velocity signal and the analog base velocity signal to provide a compensation signal which is summed with the base velocity signal and the position error signal to provide an analog control signal. The control signal is directed to and cooperates with an analog velocity control for controlling the velocity of the load so the actual velocity of the load precisely follows the desired velocity and a zero average error in velocity results.

3,828,169
APPARATUS FOR DIGITAL FREQUENCY MULTIPLICATION
Francis A. Fluet, Clarence, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 26, 1973, Ser. No. 410,134
Int. Cl. G06j *1/02*
U.S. Cl. 235—150.31 **5 Claims**



Apparatus for digital frequency multiplication having a first AND logic gate adapted to receive an input pulse train having a frequency f_{in}, each pulse width defining one iteration. A numerator shift register with digital contents N, is connected to the input of the first AND logic gate, the latter gate, when enabled by the signal f_{in}, having the digital output N. A denominator shift register, having digital contents D is connected to the input of a second AND logic gate. An accumulator register coupled to the outputs of both AND gates, having digital contents R, is applied to a comparator, which compares the contents R with a datum level. The comparator delivers an output signal f_o when R < the datum level and also delivers an enabling signal to the second AND logic gate which then has output D, the contents of the accumulator register becoming:

$$R_{n+1} = R_n - N + D$$

where R_n = the contents of the accumulator register at the nth iteration where n 0, 1, 2, 3, . . . n and

R_{n+1} = the contents of the accumulator register at the $(n+1)$th iteration; and

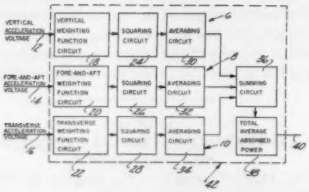
$$f_o = N/D\, f_{in}$$

Flexibility is provided by enabling N and D to be weighted to thereby vary f_o using the same apparatus.

3,828,170
COMFORT LEVEL MEASURING DEVICE
Richard A. Lee, Warren, and William F. Lins, East Detroit, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 27, 1972, Ser. No. 318,956
Int. Cl. G06g *7/60;* **G01p** *15/00*
U.S. Cl. 235—151.3 **12 Claims**

An objective means to determine the comfort level of vibrations to which human beings must be subjected. The device is one or more absorbed power measuring circuits connected to receive one or more voltage signals from an accelerometer mounted on the seat supporting the human being. Each ab-

sorbed power measuring circuit comprises a weighting function circuit, a squaring circuit, and an averaging circuit in series, with the output summed and metered to give total average absorbed power for the human on the seat.

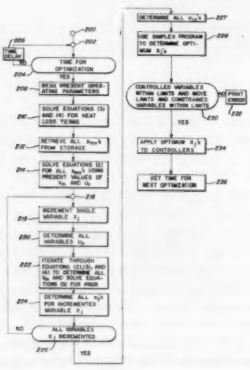


3,828,171

PROCESS APPARATUS CONTROL SYSTEM FOR OPTIMIZING OBJECTIVE VARIABLE QUALITY

Donald E. Griffin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1972, Ser. No. 280,535
Int. Cl. C10g *13/00*; **G05b** *15/02*
U.S. Cl. 235—151.12 **10 Claims**



A procedure for on-line optimization of the operation of a petroleum catalytic cracking apparatus through control of six operational variables is disclosed using a linear model centered on the present operating condition of the apparatus. Minimum and/or maximum limits are placed on the controlled variables and certain other variables representing operational parameters of the apparatus and move limits are imposed on the controlled variables. The linear model is updated each time the optimization procedure is performed and the simplex technique is used to determine the values of the controlled variables required for optimization.

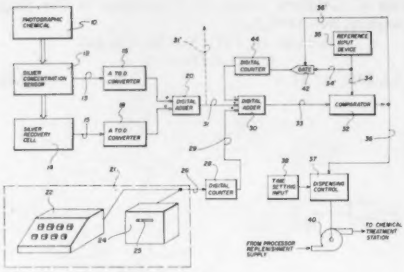
3,828,172

REPLENISHMENT CONTROLLER FOR PHOTOGRAPHIC PROCESSORS

Edward R. Schickler, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1973, Ser. No. 366,904
Int. Cl. G03d *3/06*
U.S. Cl. 235—151.12 **4 Claims**

Control of chemical replenishment in a photographic processor is provided based on a calculation of the amount of image silver in the processed photographic product. To accomplish such control, an accounting is maintained of (1) the silver entering the processor in the product and of (2) the silver removed from the product during the fixing step as determined by a sensing device. From a determination of the difference between the entering and the removed silver, a demand signal is established which is representative of the image silver fixed during processing. Dispensing of fresh processing chemicals is performed responsive to the demand signal, thus providing replenishment related to the amount of processed image silver.

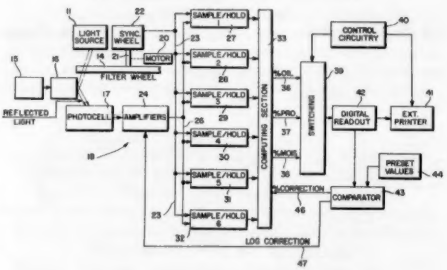


3,828,173

GRAIN ANALYSIS COMPUTER CIRCUIT

John T. Knepler, Auburn, Ill., assignor to Dickey-John Corporation, Auburn, Ill.

Filed Aug. 1, 1972, Ser. No. 277,056
Int. Cl. G06g *7/24*, *7/48*
U.S. Cl. 235—151.35 **11 Claims**



A grain analysis computer has a quartz-iodide lamp to provide infrared radiation which is directed through a lens and toward the surface of a quantity of ground grain which is to be analyzed. The infrared radiation passes through selected filters so that only a specific frequency of radiation impinges upon the grain sample, this specific frequency thus providing a reflected radiation signal which corresponds to a specific constituent of the grain sample being analyzed. A plurality of pulse signals is generated by a photocell, each pulse signal corresponding to the output of a given filter element and having an amplitude corresponding to the quantity of the constituent being measured. These pulses are applied to a signal storage circuit and a signal computing circuit to provide a direct readout in terms of per cent of the constituent being analyzed. A reference standard element is automatically positioned in light-receiving relation with the light source through the filters so that before each test is made the circuit is automatically adjusted.

3,828,174
NUMERICAL DATA INPUT APPARATUS

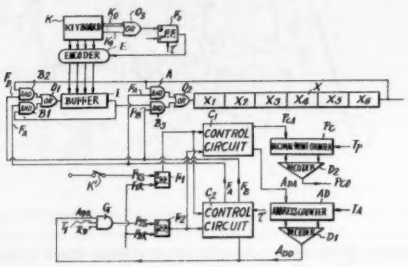
Tadahiko Nakamura, and Yoshinori Tanaka, both of Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1973, Ser. No. 338,390

Claims priority, application Japan, Mar. 9, 1972, 47-28854[U]

Int. Cl. G06f 5/00

U.S. Cl. 235—156 **4 Claims**



A numerical data input apparatus stores a numerical data signal supplied thereto in a register with a decimal-point fixed at a predetermined place in the register when the input signal is composed of digits all of which can be stored with the position of the decimal-point fixed in the register, but the input signal is stored in the register with its decimal-point shifted automatically from the predetermined place in the register when the input signal is composed of digits some of which would cause an overflow or underflow if the decimal point was kept at the predetermined place in the register.

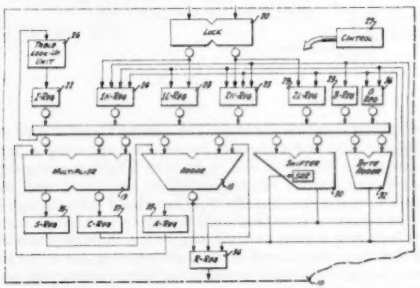
3,828,175
METHOD AND APPARATUS FOR DIVISION EMPLOYING TABLE-LOOKUP AND FUNCTIONAL ITERATION

Gene M. Amdahl, Saratoga, and Michael R. Clements, Santa Clara, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Oct. 30, 1972, Ser. No. 302,223

Int. Cl. G06f 7/52

U.S. Cl. 235—164 **7 Claims**



Disclosed is a divide method and a divide apparatus for use in a data processing system. A given dividend, No, and a given divisor, Do, are used to calculate a quotient Q. The quotient Q consists of the quotient bytes Q(O), Q(*l*),...,Q(*i*), Q(*i*+*l*),..,Q(*n*−*l*). The quotient bytes Q(*i*) are formed in successive iterations of the equation

$$[Q(i)](dp)+r(i)=Q(i+l), r(i+l)$$

were (dp) is the iteration multiplier and $r(i)$ is the i^{th} truncated remainder resulting after truncating the Q(*i*) byte from the previous iteration. The iteration multiplier (dp) equals 1-(D) $(Dp)^{-1}$ where $(Dp)^{-1}$ is an approximate reciprocal divisor. The value of (Dp) is made greater than D using a table lookup approximation of D and employing an initial calculation sequence thereby insuring that only summations are required in the iterations.

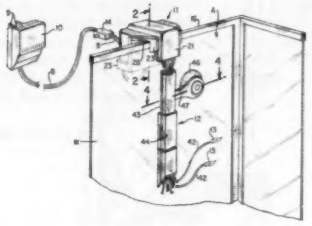
3,828,176
SAFE UNDERWATER LIGHTING SYSTEM FOR AQUARIUMS

Marvin A. Goldman, and Jerome N. Goldman, both of Great Neck, N.Y., assignors to Penn-Plax Plastics, Inc., Jamaica, N.Y.

Filed Aug. 9, 1973, Ser. No. 386,988

Int. Cl. F21v 33/00

U.S. Cl. 240—2 LC **9 Claims**



Disclosed herein is a lighting system for use within an aquarium for the purposes of safely illuminating and decorating the same. The new system includes a wall mounted transformer for reducing normal household current, i.e., 110–120 volt 60 cycle AC to 3–3.5 volt 60 cycle AC; a special low voltage terminal box means adapted to be self supporting on the upper edge of an aquarium wall; conductor means interconnecting the transformer and the terminal box means and having interposed therein a single "on-off" switch; a plurality of submersible miniaturized incandescent lamps each having a pair of elongated conductors projecting therefrom which conductors are adapted to be connected to a pair of terminals in the terminal box means for being energized by low voltage; and a telescoping channel means for retaining the lamp energizing conductors against the side of an aquarium wall. By virtue of the reduction of the voltage available at the terminal box to three volts, the system is totally safe and harmless. In the event of the accidental submersion of the terminal box or in the event of any other accidental shorting across the lamp terminals, the applied voltage is absolutely harmless and will not exceed 3–3.5 volts. Moreover, since the lamps are operated submerged in water, they are constantly cooled during operation, causing their effective life spans to be greatly increased, thereby substantially reducing the need for replacement.

3,828,177
ILLUMINATED FISH LURE

John R. Day, 39 Pigeon Hill St., Rockport, Mass. 01966

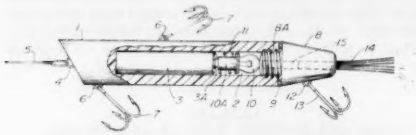
Filed May 16, 1973, Ser. No. 360,840

Int. Cl. F21l 1/00

U.S. Cl. 240—6.4 F **4 Claims**

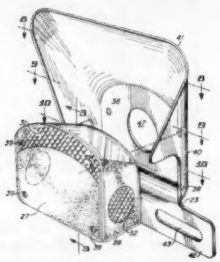
An artificial fish lure having a watertight housing containing an electrical battery and a bulb which provide a source of illumination in the housing. A bundle of optical fibers extends into the housing and has its inner end close to the light source. The optical fibers conduct light out of the housing and the lu-

minous outer ends of the fibers are spaced apart to give the aspect of a plurality of separated luminous spots. Various



means can be employed to cause the luminous spots to be held in a desired pattern.

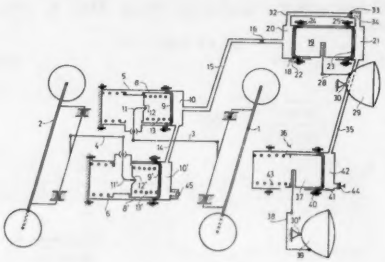
3,828,178
TAILLIGHT ASSEMBLY
Quentin D. Bickel, 204 S. Papago Cir., Tempe, Ariz. 85281
Filed Sept. 18, 1973, Ser. No. 398,441
Int. Cl. B60q 1/30
U.S. Cl. 240—7.1 R **1 Claim**



A taillight assembly for a vehicle has a translucent enclosure having red light transmitting front, side and top areas and a white light transmitting bottom area. The front area has a reflector thereon. A reflective hood extends upwardly forward over the enclosure.

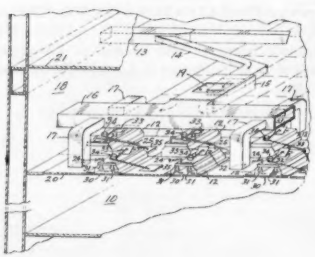
3,828,179
HYDRAULIC SYSTEM FOR AUTOMATICALLY ADJUSTING THE POSITIONS OF HEADLIGHTS OF AN AUTOMOBILE
Steffen Straub, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 1, 1973, Ser. No. 337,108
Claims priority, application Germany, Mar. 14, 1972, 2212131
Int. Cl. B60q 1/10
U.S. Cl. 240—7.1 LJ **8 Claims**

What follows is the description of an improved hydraulic system for automatically adjusting the positions of headlights of an automobile. The hydraulic system includes two component hydraulic systems, the first of which is provided with a mechanical linkage structure associated with spring-suspended parts at the front and rear of the automobile, two measuring cylinders having pistons displaceable therein and connected to the linkage structure, and a conduit which connects the two measuring cylinders with one another and with the work space of a common working cylinder of the hydraulic system. The second component system is provided with a second working cylinder having a piston displaceable therein and a work space which is connected by a conduit to the common working cylinder, as well as a pair of headlight position adjusting linkages connected to the pistons of the two working cylinders on the one hand and adapted for mechanical connection to pivotably mounted headlights of the automobile, on the other hand. This hydraulic system is improved by providing it with a fill-up valve in one, and a vent valve in the other of the component systems, and with a hydraulic conduit inter-



connecting the two systems in which conduit there is interposed a shut-off structure which can be opened in the direction of liquid flow from the fill-up valve to the vent valve, while the entire hydraulic system is being filled.

3,828,180
LIGHTING FIXTURE
Gershon Meckler, 2750 Ridge Valley Rd., Atlanta, Ga. 30327
Filed Nov. 20, 1972, Ser. No. 308,170
Int. Cl. F21v 29/00; F24f 3/00
U.S. Cl. 240—9 A **3 Claims**



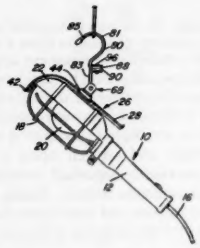
A lighting fixture is disclosed. The lighting fixture comprises a top and side and end walls, means for supporting a light source in the fixture to emit light from a light-emitting side thereof, and conduit means operatively associated with the fixture so that a heat transfer fluid circulated therethrough is in heat transfer relationship with the fixture. The fixture has a path including at least one opening therein through which air can flow from the exterior on the light-emitting side to the interior, and to the exterior opposite the light-emitting side, and a damper movable between an open position and a closed position, and effective in the closed position, but ineffective in the open position, to prevent the flow of air from the interior of the fixture to the exterior opposite the light-emitting side. The fixture also includes means responsive to the temperature of the lighting fixture, and effective to move the damper toward an open position when the fixture temperature exceeds a control temperature, and to move the damper toward a closed position when the fixture temperature is below a control temperature.

3,828,181

ADJUSTABLE UNIVERSAL TROUBLE LIGHT SUPPORT

Charles M. Goodwin, Rt. No. 2, Mount Vernon, Ohio 43050

Filed Sept. 10, 1973, Ser. No. 395,559
Int. Cl. F21v *15/00, 21/00*
U.S. Cl. 240—54 A 11 Claims



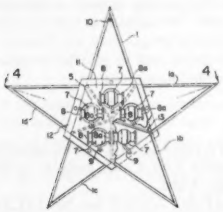
An elongated track having one curved end is provided for support from the outer surface of the light shield of a conventional drop light with the curved portion of the track curving over the outer curved portion of the shield of the drop light. A slide is mounted on the track for adjustable positioning therealong and the slide and track include coacting structure operative to releasably secure the slide in adjusted positions along the track. A mount is pivotally supported from the slide for frictionally resisted rotation about a first axis transverse to the slide and extending between the slide and shield. A support arm is pivotally supported at one end to the mount for frictionally resisted oscillation about a second axis extending at generally right angles relative to the first mentioned axis and the other end of the support arm has a laterally opening hook thereon. The support arm includes opposite end sections with adjacent ends and remote ends and the adjacent ends include right angularly disposed side-by-side integral eye portions pivotally secured together for rotation of the outer end section of the support arm and the hook supported therefrom for rotation about an axis generally paralleling the longitudinal extent of the support arm.

3,828,182

STAR TYPE ORNAMENTAL STRUCTURE

Joseph Semonovich, 5551 Grasmere Ave., Maple Heights, Ohio 44137

Filed Apr. 27, 1973, Ser. No. 355,263
Int. Cl. F21f *1/00*; A47g *33/02*
U.S. Cl. 240—10 S 8 Claims



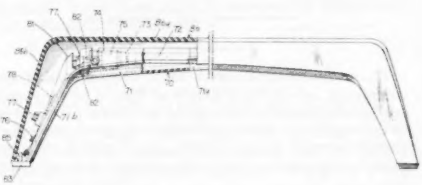
An ornamental structure preferably in the shape of a star which consists of a plurality of triangularly-shaped apices formed of platic material, such as plexiglas, which glows under the influence of light. The triangular plastic apices are connected together by removable bolts extending through mating flanges on opposed canisters. One or both of the canisters may have an opening to receive an electrical light bulb having a contact on its inner end which engages a contact on the holder when the light bulb is threaded in place and electrical conductors lead from the contact on the holder to a source of electrical energy. A spring holder is provided to receive shrubbery or a branch of a tree to hold the structure in an upright position. An aperture is also provided in one of the apices to suspend the structure from a support, such as a window sill. The holder for the bulbs is provided with spring clips which may be inserted through an opening in one of the canisters when compressed and engages the edges of the opening to hold the light bulb in place when the pressure is released. Dividers may also be provided to form a plurality of compartments, each of which receives a light bulb and in addition a series of pairs of triangularly-shaped plastic apices may be held in place by oppositely disposed canisters between which a divider is inserted to provide a pair of compartments, each of which has a light bulb therein and each of which is preferably of a color different from the other.

3,828,183

INDIRECT LIGHTING FIXTURE

Knut Arenhold, K-Kehl A/Rhine, Germany, assignor to Melude S.A., Fribourg, Switzerland

Continuation-in-part of Ser. No. 808,954, March 20, 1969, abandoned. This application Sept. 10, 1971, Ser. No. 179,310
Claims priority, application France, Mar. 29, 1968, 68.146435; July 8, 1968, 68.158328; Sept. 17, 1968, 68.166411; Nov. 22, 1968, 68.174995
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.11 R 10 Claims



A lighting fixture comprises a chassis and a cover. The chassis comprises an inner support member having a generally rectangular central portion and end portions extending angularly from the central portions. Provisions are made for mounting one or more fluorescent light tubes on the side of the central portion opposite that from which said end portions extend. The cover which similarly has a central portion and inclined end portions fits over the chassis with the light tubes between the cover and the inner support member. The cover has side flanges extending in the direction of the chassis and the inner supporting member has angular side flanges received between the side flanges of the cover.

3,828,184

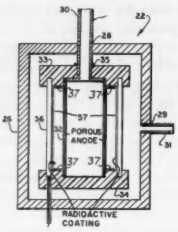
IONIZATION CHAMBER WITH A POROUS ANODE

Joseph D. Lupton, 2653 Henderson Rd., Tucker, Ga. 30084

Filed Mar. 8, 1972, Ser. No. 232,721
Int. Cl. H01j *39/26*
U.S. Cl. 250—83.6 FT 19 Claims

An Ionization Detector analyses a flowing fluid stream for a specific gas or gases. The recirculation of gases between electrodes is eliminated, and the gas between the anode and cathode is not restrained. The anode is made of a porous, electrically conductive material and the cathode is a beta emitting foil positioned adjacent to, but physically and electrically isolated from, the anode. The detector will function with or without an added cell voltage. The response of the detector to

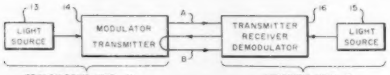
the water of aqueous solutions is so limited in duration that a characteristic response from organic substances can be obtained even when the substance is introduced in an aqueous solution to the chromatographic column.



3,828,185
MODULATED LIGHT COMMUNICATION SYSTEM

John M. Vandling, Pleasantville, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Dec. 1, 1960, Ser. No. 73,151
Int. Cl. H04b 9/00
U.S. Cl. 250—199 35 Claims

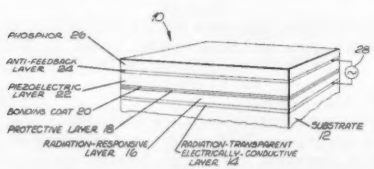


35. A transmitter-receiver for a communication system, comprising, an electrical source of light, a power supply for said source, means for varying the amount of power furnished to said source in accordance with a signal whereby the light emitted by said source is modulated, a concave mirror, a partly transparent and partly reflective mask interposed in the light path between said source and said concave mirror whereby a portion of the light from said source is transmitted through said mask to said mirror and reflected in a beam directed to a remote point, and photosensitive means for generating a signal in accordance with the variations of the intensity of light incident thereon, said photosensitive means being positioned to receive light from said remote point after reflection by said concave mirror and said mask.

3,828,186
APPARATUS FOR INTENSIFYING RADIATION IMAGES

Arthur J. Grolitzer, Tarzana, Calif., assignor to Vocon, Inc., Los Angeles, Calif.

Filed Aug. 9, 1972, Ser. No. 278,894
Int. Cl. H01j 31/50
U.S. Cl. 250—213 R 8 Claims



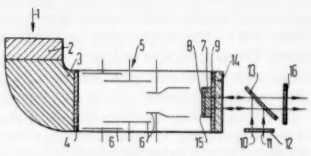
A radiation-responsive layer preferably of cesium fluoride is bonded to an electrically-conductive radiation-transparent layer of material which is also utilized as an electrode. A piezoelectric polarized ferroelectric ceramic layer preferably of lead zirconate titanate is bonded to the radiation-responsive layer. An output device such as a visible-light emitting phosphor is bonded along with a radiation-opaque electrical conductive layer, also used as an electrode, to the piezoelectric layer. A source of electrical potential is connected between the two electrodes to thereby apply an electrical potential across the piezoelectric layer and the radiation-sensitive layer.

In the manufacture of the apparatus, the cesium fluoride layer is formed by vacuum deposition from a metallic cesium source in a boron trifluoride atmosphere while bleeding in small amounts of boron trifluoride to maintain a substantially constant atmospheric level thereof during evaporation. The piezoelectric layer is formed by vacuum deposition of lead zirconate titantate in an atmosphere containing trimethylamine, dimethylamine, argon and oxygen upon a bonding coat deposited on the previously-deposited cesium fluoride layer while retaining the substrate heated. During the deposition process, the trimethylamine and dimethylamine are thermally cracked thereby to provide carbon as a dopant for the lead zirconate titanate layer.

3,828,187
COHERENT-OPTICAL IMAGE CONVERTER

Gerhard Winzer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 12, 1973, Ser. No. 369,157
Claims priority, application Germany, June 30, 1972, 2232247
Int. Cl. H01j 31/50
U.S. Cl. 250—213 VT 4 Claims



An image converter tube for direct time conversion of an incoherent image into a coherent image with a photo cathode, an electron optic and a transparent planar anode which is arranged on a viewing screen. An electro-optical crystalline coating is arranged on the anode and is provided with a dielectric mirror coating and with a device for the external illumination of the electro-optical crystalline coating with a plane-polarized laser light beam. The light beam, after passing through the crystalline layer is rotated in its direction of polarization and after passing through a subsequent analyzer is intensity modulated. The cathode is a planar photo cathode on which the incoherent image may be formed, which for all image points is directly and in parallel transferable onto the electro-optical crystalline coating.

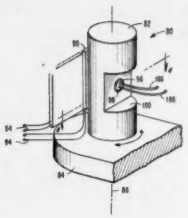
3,828,188
ROTATIONAL POSITION SENSOR

Jerry Matula, Culver City, Calif., assignor to Pertec Corporation, Los Angeles, Calif.

Filed Feb. 12, 1973, Ser. No. 331,371
Int. Cl. G01d 5/34; G08b 21/00
U.S. Cl. 250—231 SE 16 Claims

A rotational position sensor is disclosed in which the beam from a light emitting diode mounted on a rotatable element is directed onto a pair of adjacent photocells. The portion of the beam falling upon each of the photocells determines the photocell output signal. The output signals are combined to form a signal which varies generally linearly with the rotational position of the element upon which the light emitting diode is mounted. The photocells are disposed in relatively

close relation to one another, and the light emitting diode is disposed relatively close to each of the photocells and a short distance from the axis of rotation of the element. By use of ap-



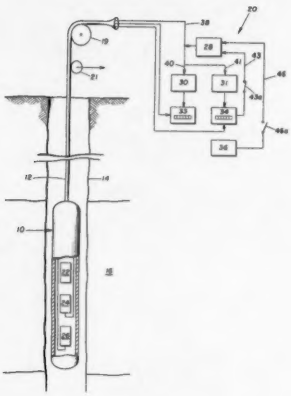
propriate masks the size of the beam from the light emitting diode can be varied so as to provide linear response over varying angular ranges of movement of the rotatable element.

3,828,189

LOGGING TECHNIQUE FOR ASSAYING FOR URANIUM IN ROCK FORMATIONS

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,612
Int. Cl. G01t *1/16*
U.S. Cl. 250—253 **16 Claims**



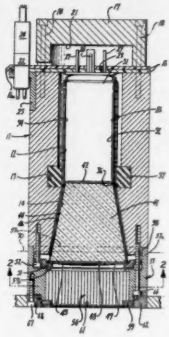
Disclosed is a uranium exploration technique for determining the uranium content of a formation traversed by a borehole. A delayed fission neutron assay log is obtained by irradiating the formation with repetitive bursts of fast neutrons and detecting delayed neutrons resulting from neutron fission of uranium at time intervals between the fast neutron bursts and after dissipation of the neutrons originating in the bursts. In addition, a response log is obtained by irradiating the formation with a source of fast neutrons whereby the neutrons from this source are moderated in the formation to lower energy levels and are subject to absorption. Secondary radiation attendant to these lower energy neutrons is recorded in order to obtain a log representative of the response of the formation to moderation and absorption of the neutrons. The two logs thus obtained are correlated in order to determine a corrected value of uranium content of the formation.

3,828,190

DETECTOR ASSEMBLY

Erik B. Dahlin, Saratoga, and Robert C. Hill, Santa Clara, both of Calif., assignors to Measurex Corporation, Santa Clara, Calif.

Continuation of Ser. No. 791,915, Jan. 17, 1969, abandoned.
This application Sept. 23, 1971, Ser. No. 183,263
Int. Cl. G01t *1/20*
U.S. Cl. 250—308 **4 Claims**



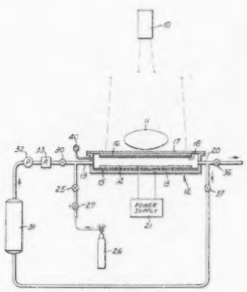
Detector assembly for detecting radiation which has been directed at a sheet of material which has a honeycomb structure for collimating the radiation to thereby minimize sensitivity of the detector assembly to the position of the sheet relative to the detector assembly.

3,828,191

GAS HANDLING SYSTEM FOR ELECTRONRADIOGRAPHY IMAGING CHAMBER

James Richard Eseke, Mission Hills; Arthur Lee Morsell, Tarzana; Eric Phillip Muntz, Pasadena, and Murray Samuel Welkowsky, Los Angeles, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed May 2, 1973, Ser. No. 356,609
Int. Cl. G03b *41/16*
U.S. Cl. 250—315 **10 Claims**

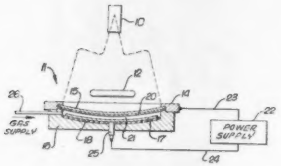


Process and apparatus for providing imaging gas under pressure to the imaging chamber of an electronradiographic system. A pump for providing imaging gas under pressure to the imaging chamber, a source of carbon dioxide gas under pressure for flushing air from the chamber to exhaust and for flushing imaging gas from the chamber to a recovery reservoir, which reservoir includes a supply of lime for reacting with the carbon dioxide gas, leaving the imagaing gas for recycling to the imaging chamber.

3,828,192
SPHERICAL SEGMENT ELECTRODE IMAGING CHAMBER

Arthur Lee Morsell, Tarzana, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Aug. 31, 1973, Ser. No. 393,419
Int. Cl. G03b 17/26
U.S. Cl. 250—315 8 Claims

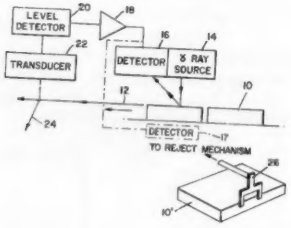


An imaging chamber for an electron radiography system, including spaced spherical electrodes defining a gas gap therebetween. An arrangement for clamping the receptor sheet and stretching it to a spherical configuration against one of the electrodes. A plurality of clamp strips disposed about one electrode and spring loaded toward the other electrode, with the other electrode being moveable toward the first electrode to clamp the receptor sheet at the clamp strips and then move the clamp strips against the spring load to stretch the clamped receptor sheet.

3,828,193
METHOD AND APPARATUS FOR DETECTING PARTIALLY-FILLED OR ABSENT CONTAINERS IN A SEALED SHIPPING CARTON

Lloyd A. Nelson, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Continuation-in-part of Ser. No. 122,880, March 10, 1971, abandoned. This application Aug. 11, 1971, Ser. No. 172,354
Int. Cl. G01n 23/10
U.S. Cl. 250—360 14 Claims

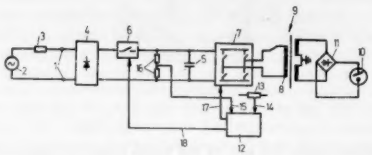


A non-destructive method and apparatus for determining the presence of broken or missing containers in a sealed opaque shipping case, including a source of γ-rays directed at the case, means for detecting variations in γ-ray radiation at a fixed point as the case passes between the γ-ray source and the detecting means, and means responsive to the variations for isolating any shipping case found to contain broken or missing containers.

3,828,194
X-RAY DIAGNOSING APPARATUS WITH A REGULATING DEVICE FOR THE X-RAY TUBE VOLTAGE

Hans Grasser, Sack, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed May 3, 1973, Ser. No. 356,753
Claims priority, application Germany, May 12, 1972, 2223371
Int. Cl. H05g 1/34
U.S. Cl. 250—408 3 Claims

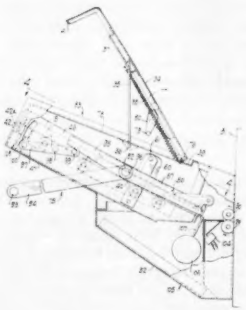


An X-ray diagnosing apparatus has a regulating device for the X-ray tube voltage. The invention is particularly characterized by the provision of a feed device for the X-ray tube which includes a condenser and a comparison member for voltage corresponding to the actual value of the X-ray tube voltage and a voltage incorporating the required value of the X-ray tube voltage. Switching means are located in front of the condenser for interrupting the charging of the condenser when an upper condenser voltage is reached. Switching means are located behind the condenser for switching off the X-ray tube when a lower limit of the condenser voltage is reached. These switching means are operable by the comparison member which actuates them to again switch on the condenser and the X-ray tube when a condenser voltage is reached which is close to the condenser voltage corresponding to the required value of the X-ray tube voltage.

3,828,195
CASSETTE UNLOADER

James L. Snarr, Cleveland Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 882,131, Dec. 4, 1969, abandoned. This application Mar. 21, 1972, Ser. No. 236,747
Int. Cl. G01n 23/04
U.S. Cl. 250—468 12 Claims



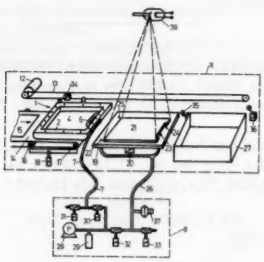
Mechanism and process for opening an X-ray film cassette in an illuminated environment. The mechanism has detents for releasing spring retainers of a conventional cassette and a hold-down to hold the cassette closed until after a surrounding housing has been rendered light tight. An elevating mechanism when actuated, lifts the forward portion of the

hold-down, allowing the cassette cover plate to drop open and the leading edge of a film to drop. The mechanism thereafter elevates the trailing portion of the hold-down, releasing the film and allowing it to be gravity fed to a processor.

3,828,196
X-RAY PHOTOGRAPHING DEVICE

Norbert Mika; Rudolf Schuldreich, and Helmut Berger, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 8, 1973, Ser. No. 328,145
Int. Cl. G03b *41/16*
U.S. Cl. 250—468 **7 Claims**

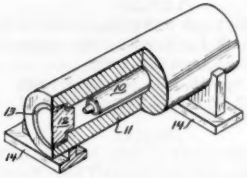


An X-ray photographing device has a transporting device for sheet films for transporting individual loose film sheets from a ready position protected from rays to a photographing position and from the photographing position to a delivery location protected from rays. The invention is particularly characterized by the provision of a film carriage having at least one suction cup for holding the film sheets and connected to a pressure actuating system.

3,828,197
RADIOACTIVE WASTE STORAGE

Allyn L. Boldt, Kennewick, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 17, 1973, Ser. No. 351,911
Int. Cl. G21f *9/00*
U.S. Cl. 250—506 **7 Claims**

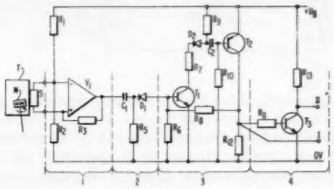


High-level radioactive wastes are stored in a heavy walled metal cask which is stored in the open where natural convection of air over the cask removes the decay heat. If the waste is solely from plutonium-recycle pressurized-water reactors, the high neutron dose rate around the cask must be reduced by surrounding the cask in its storage position with crushed graphite or placing cooling fins on the cask and employing neutron shielding material such as polyethylene between the fins.

3,828,198
DEVICE FOR FORMING AND PROCESSING VELOCITY SIGNALS IN VEHICLES

Hans-Jorg Florus, Goppingen; Horst Grossner, Geradstetten, and Gerhard Osswald, Donzdorf, all of Germany, assignors to Daimlee-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Jan. 26, 1973, Ser. No. 327,168
Claims priority, application Germany, Jan. 25, 1972, 2203320
Int. Cl. H01h *35/00*
U.S. Cl. 307—120 **25 Claims**

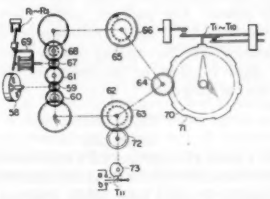


A system for producing and processing velocity signals in vehicles, especially in motor vehicles, in which a sensor is present that serves for producing a signal having a frequency proportional to the vehicle velocity; this frequency signal is fed to a following basic circuit which converts this frequency signal into rectangular pulses of both constant on and constant off time; as many switching stages for different velocity thresholds as desired can thereby be connected to this basic circuit.

3,828,199
TIMING SYSTEM HAVING A HIGH SPEED AND A LOW SPEED GEAR TRAIN

Yutaka Sakai, Takatsuki, and Kazuya Kimura, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 1, 1972, Ser. No. 302,911
Claims priority, application Japan, Nov. 5, 1971, 46-88580; June 20, 1972, 47-62153
Int. Cl. H01h *43/12*
U.S. Cl. 307—141 **8 Claims**



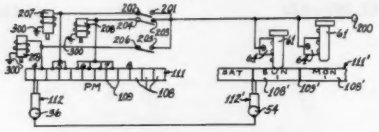
A timing system for the programed control of washing, rinsing, draining and other processes in fully automatic clothing washing machines, dish washing machines and the like in which means are provided for executing a plurality of programs by suitably omitting some processes of a fundamental program.

3,828,200

PROGRAMMING TIMER WITH SERIES CONNECTED SWITCHES

Martin E. Gerry, 13452 Wihthrope St., Santa Ana, Calif. 92705

Filed June 27, 1973, Ser. No. 374,111
Int. Cl. H01h *43/20*
U.S. Cl. 307—141.8 **11 Claims**



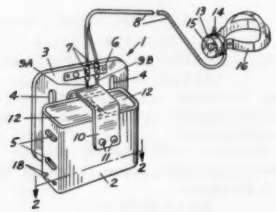
A programming timer for periodically controlling external devices which are connected thereto. This timer includes two commutators and indicators for selection of the period during the day, and the day of the week, during which the external devices are to be periodically activated. The timer and day indicators are driven by a synchronous motor and these indicators also act as contactors to provide power to the external devices for activating same.

3,828,201

PORTABLE POWER PACKAGE

Harry E. Allen, Sr., 25 Crape Myrtle St., Shreveport, La. 71106

Filed May 23, 1973, Ser. No. 363,094
Int. Cl. H02j *7/00*
U.S. Cl. 307—150 **5 Claims**



A portable power supply which may be strapped to the body or carried by hand, including a carrying case adapted to receive batteries and appropriate electrical connections, the case further including a switch which aids in converting from 6 to 12 volt power. The package output may be typically adapted to power a head lamp, which lamp or other output is typically connected to the carrying case by a cord of sufficient length to allow freedom of movement of the output with respect to the carrying case.

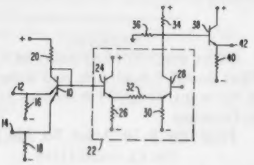
3,828,202

LOGIC CIRCUIT USING A CURRENT SWITCH TO COMPENSATE FOR SIGNAL DETERIORATION

Herbert Stopper, Orchard Lake, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 159,990, July 6, 1971, Pat. No. 3,746,885. This application Feb. 20, 1973, Ser. No. 333,705
Int. Cl. H03k *19/24, 19/30, 5/08*
U.S. Cl. 307—218 **10 Claims**

An improved logic circuit comprising an input semiconductor, an output semiconductor and a current switch connected therebetween to compensate for signal deterioration in the logic circuit. The input semiconductor is biased to remain unsaturated in response to a binary signal swing at an input terminal. In an AND gate, the input semiconductor is a multi-



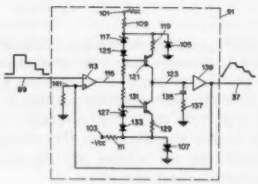
emitter transistor; in an OR gate, the input semiconductor is a plurality of transistors.

3,828,203

RAMPED-STEP SIGNAL GENERATING CIRCUIT

Ross A. Belson, Natick, and Gastor A. Palombo, Chelmsford, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Continuation of Ser. No. 202,031, Nov. 24, 1971, abandoned, which is a division of Ser. No. 22,235, March 24, 1970, Pat. No. 3,644,806. This application July 12, 1973, Ser. No. 378,466
Int. Cl. H03k *3/00, 4/00, 5/00*
U.S. Cl. 307—228 **9 Claims**



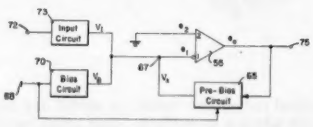
A high speed incremental web transport system especially suited for a high speed printer application includes two motors with velocity feedback driven from a common controller in accordance with a computer originated movement request. Incremental position transducers allow precise repetitive spacing and positional stability of the motor shafts. Differential tension to be created during printing periods is obtained by controlling motor current. Synchronization control for skip type movements prevents a build-up of positional error.

3,828,204

SENSITIVE PULSE THRESHOLD DETECTOR

Robert P. Farnsworth, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 16, 1973, Ser. No. 351,686
Int. Cl. H03k *5/20, 17/58;* **H03f** *1/02*
U.S. Cl. 307—235 R **25 Claims**



A sensitive pulse detector which in one embodiment incorporates a tunnel diode is disclosed. The tunnel diode prior to the application of a gate pulse of a selected duration during which an input pulse may be received is pre-biased in the absence of the gate pulse so that the current passing

therethrough is equal to its peak current, with the diode being maintained in its low voltage state. The application of the gate pulse produces a current bias which reduces the diode current from its peak current value by a known value. Switching to the high voltage state takes place only if, an input current produced in response to an input pulse, raises the diode current above the peak current value. In another embodiment incorporating an amplifier, the latter's offset voltage is automatically compensated for to enable pulse detection independent of the offset voltage. In yet another embodiment, pulse detection is accomplished with a regenerative voltage circuit pre-biased to one of its trigger points.

3,828,205

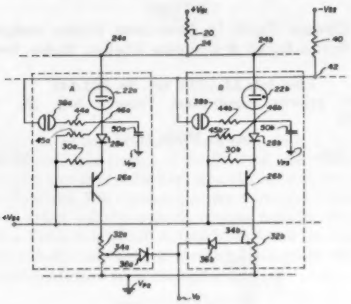
MEMORY CIRCUIT

John G. Konopka, Mundelein, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 189,637, Oct. 15, 1971, Pat. No. 3,746,886. This application May 17, 1973, Ser. No. 361,023

Int. Cl. H03k *3/37*; **G11c** *11/28*

U.S. Cl. 307—238 **12 Claims**



A triggered neon lamp memory circuit selectively produces control voltages for an electrically tuned receiver. Each stage comprises a neon lamp and a control voltage potentiometer in series with a common source of sustaining potential. In one embodiment, when the neon lamp of a given stage is triggered by manually actuating a touch contact, a series transistor is turned on to effectively couple a fixed voltage to the potentiometer. When the neon lamp turns off, the transistor turns off to remove the fixed voltage from the potentiometer while also raising the voltage at one terminal of the neon lamp to reduce the voltage thereacross to substantially below trigger potential. In another embodiment, when the neon lamp of a given stage is triggered, a diode coupled to a reference potential clamps the voltage across the potentiometer to a fixed value.

3,828,206

HIGH SPEED DRIVING CIRCUIT FOR PRODUCING TWO IN-PHASE AND TWO OUT-OF-PHASE SIGNALS

Borys Zuk, New Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

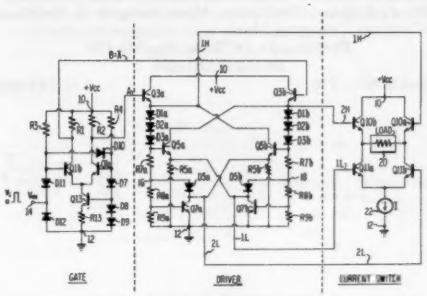
Filed Mar. 12, 1973, Ser. No. 340,297

Claims priority, application Great Britain, Mar. 15, 1972, 11970/72

Int. Cl. H03k *17/66*

U.S. Cl. 307—254 **14 Claims**

The circuit includes four transistors, each transistor being connected at its emitter to a different one of four switches arranged in a bridge configuration. The four transistors are paired, each pair including a first transistor connected at its emitter to the collector of the second transistor. The conduction of the first transistor of one pair and of the second transistor of the other pair is controlled by the same signal and the conduction of the second transistor of said one pair and



the first transistor of the other pair is controlled by the complement of said signal. The two transistors of each pair produce complementary signals at their emitters and conduct current for all signal conditions.

3,828,207

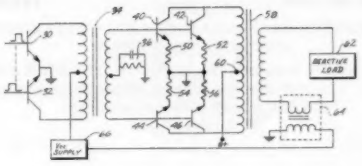
BOOST CIRCUIT FOR SATURATING OUTPUT STAGES OF HIGH POWER AMPLIFIERS

Benjamin Chandler Shaw, Granada Hills, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed June 6, 1973, Ser. No. 367,676

Int. Cl. H03k *17/60*

U.S. Cl. 307—254 **5 Claims**

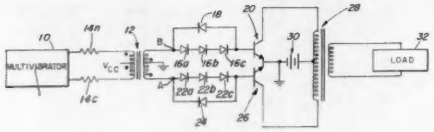


A high power, high efficiency transistor amplifier is disclosed having an input drive signal in the form of a square wave with a square wave or saturated voltage output. This amplifier drives a tuned or reactive load with the result that the output current wave form is sinusoidal or some form other than a square wave. A current transformer or other current sensing device is connected into the output circuit, and a portion of the output current is fed back to the input in such sense that resulting sinusoidal voltage pulses are added to each square wave input pulse. Where the output transistors are connected in push-pull in a grounded emitter configuration, resistors are normally connected in the emitter circuit. A sinusoidal voltage is developed across these resistors which subtracts from the input drive square wave voltage pulses. This results in a degradation in the drive signal which may cause the output transistors to drop out of saturation which then causes them to try to deliver excessive power with resulting danger of burning them out. By feeding back a sinusoidal voltage which is added to the base drive, saturation is maintained throughout the length of the drive pulse. In another embodiment a plurality of identical amplifiers are connected into a common output such that their square wave voltage output signals are displaced slightly in time and algebraically added to produce a sine wave synthesis output signal across the load which, in this case, may be either reactive or resistive. A similar current sensing or voltage sensing device connected into the load circuit provides a similar feedback signal to each amplifier to assure saturation.

3,828,208
DRIVER CIRCUIT USING DIODES TO CONTROL THE MINORITY CARRIER STORAGE EFFECT IN SWITCHED TRANSISTORS

John J. Kelleher, Tewksbury, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 31, 1972, Ser. No. 222,170
Int. Cl. H03k 1/00
U.S. Cl. 307—270 2 Claims

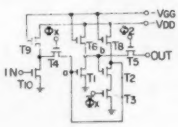


An improved driver circuit for a pair of switching transistors in a DC-DC converter or a DC-AC inverter is shown. The illustrated circuit includes a switchable constant current source coupled through a transformer and semiconductor diodes to the switching transistors. The diodes are arranged so that, as long as minority carrier current flows in either one of the switching transistors, the other is prevented from responding to a switching signal from the constant current source.

3,828,209
FLIP-FLOP CIRCUIT

Hiroto Kawagoe, and Kosei Nomiya, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 29, 1973, Ser. No. 327,699
Int. Cl. H03k 17/00
U.S. Cl. 307—279 10 Claims



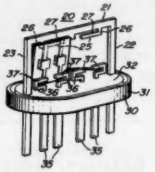
A static flip-flop circuit constructed of field-effect transistors, wherein a static section comprises a field-effect transistor which allows an information to be held during its conductive state and a new information to be written during its non-conductive state and which dispenses with a transfer gate otherwise included in a feedback path of such static section, so that the likelihood of an erroneous operation attributable to charge sharing is eliminated.

3,828,210
TEMPERATURE COMPENSATED MOUNTING STRUCTURE FOR COUPLED RESONATOR CRYSTALS

Corwin E. Livenick, Hickory Hills; Stanley Malinowski, Park Ridge, and Robert D. Vann, Elmhurst, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 22, 1973, Ser. No. 325,300
Int. Cl. H01v 7/00
U.S. Cl. 310—9.1 6 Claims

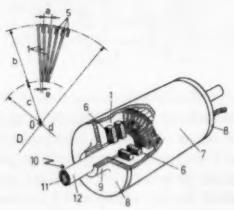
A mounting structure for one or more coupled resonator crystal plates with each plate having a number of electrodes, and pairs of the electrodes forming a resonant structure, includes a conductive frame member having portions which are secured to one of the electrodes from separate pairs of electrodes. A number of mounting means are each connected to separate ones of the other electrodes of the pairs of electrodes. The mounting members have a bend formed therein for resiliently supporting the crystal plates and allowing expansion and contraction of the crystal plates with temperature variations. The frame member and mounting members are secured in a mounting base with portions extending through the mounting base for connection to external circuitry.



3,828,211
TUBULAR INDUCTOR STRUCTURE FOR LINEAR MOTORS

Joseph Laronze, Tassin La Demi-Lune, France, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed July 23, 1973, Ser. No. 381,448
Claims priority, application France, July 28, 1972, 72.27956
Int. Cl. H02k 41/02
U.S. Cl. 310—13 15 Claims

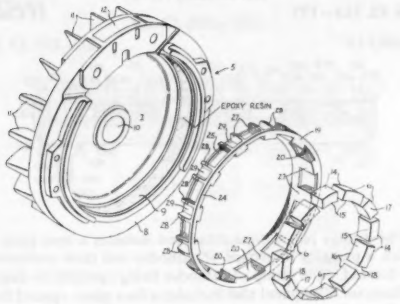


An annular cylindrical inductor component of an electric motor of the linear type which comprises an annular assembly of radially extending and essentially flat sheets of a ferro-magnetic material. The inner edge portions of the assembled sheets which form a cylindrical opening within which the motor armature is mounted for sliding movement are provided with longitudinally spaced notches which form cylindrical recesses within which the motor windings are located and the radially outer portions of the sheets are deformed in a direction perpendicular to the plane of the sheet to establish longitudinally extending spaces between adjacently contacting sheets. The deformations along the radially outer portions of the sheets can be established by a double-bending operation or these portions of the sheets can be provided with single or double ribs. Also, non-deformed sheets can be located between sheets which are deformed and which extend radially outward beyond the deformed sheets thus to function as cooling fins. The outer portions of the sheets may also be notched to establish one or more longitudinally spaced peripheral grooves within which a strand of solder, or ferrule or wire binding is located so as to bind the sheets together. Bearings for supporting the rotor can be mounted at the radially inner portion of the sheet assembly or these can be carried by endplates secured to the opposite ends of the sheet assembly.

3,828,212
ASSEMBLY OF ALTERNATOR MAGNET BLOCKS WITH ENGINE FLYWHEEL

Joseph R. Harkness, Germantown; John D. Santi, West Allis, and Leo J. Lechtenberg, Elm Grove, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Division of Ser. No. 181,025, Sept. 16, 1971. This application Dec. 12, 1973, Ser. No. 424,184
Int. Cl. H02k 21/22
U.S. Cl. 310—153 6 Claims

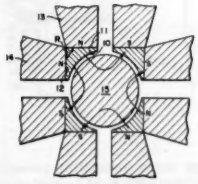


To secure magnet blocks for an alternator in a cup-shaped flywheel, the inner surface of the flywheel side wall is coated with epoxy and an annular cage is axially inserted into the well in the flywheel. The cage cooperates with inner flywheel surfaces to define radially inwardly opening pockets, into each of which a block is inserted. A tool is disclosed for forcing the blocks radially outwardly to desired positions in which they are held by a fixture while the epoxy is cured.

3,828,213
STATOR FOR LOW-INERTIA DC MACHINES

Seizi Yamashita, and Kazuo Onishi, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1973, Ser. No. 362,966
Claims priority, application Japan, June 5, 1972, 47-55038; Aug. 30, 1972, 47-86218
Int. Cl. H02k 1/06
U.S. Cl. 310—254 3 Claims

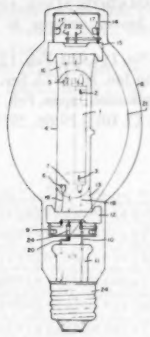


This invention relates to a stator which forms the magnetic circuit of a DC machine, and provides a stator for a low inertia motor particularly adapted for the capstan driving of computors, in which the cross-sectional area of magnets is increased, whereby the interpole leakage flux is minimized and the effective flux density between the poles and the armature is increased and further the flux density is made largest at the contacting surface with the pole.

3,828,214
PLASMA ENSHROUDED ELECTRIC DISCHARGE DEVICE

William M. Keeffe, Rockport; W. Calvin Gungle, Danvers, and Albert W. Olson, Rockport, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Aug. 30, 1973, Ser. No. 393,022
Int. Cl. H01j 61/22
U.S. Cl. 313—1 9 Claims

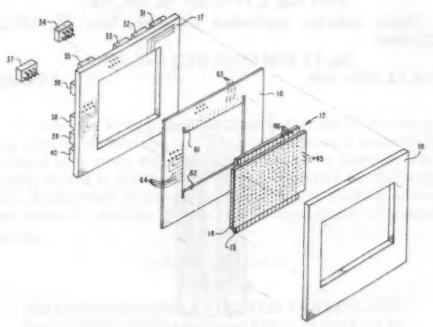


The arc tube of a high intensity discharge lamp is disposed within a second arc tube which has a filling that is more easily startable than that of the first arc tube. A discharge struck between the electrodes of the second arc tube aids in starting a discharge between the electrodes of the first arc tube.

3,828,215
INTEGRATED PACKAGING ARRANGEMENT FOR GAS PANEL DISPLAY DEVICE

Malvin S. Bilsback, Woodstock, N.Y., assignor to International Business Machines Corporation, Amonk, N.Y.

Filed June 30, 1972, Ser. No. 267,926
Int. Cl. H01j 5/50
U.S. Cl. 313—50 15 Claims



A display device includes a gas panel, at least one circuit board, and an interconnecting flexible sheet. The gas panel preferably includes a pair of glass plates fused together with a chamber therebetween filled with an illuminable gas. Parallel electrical conductors on one of the glass plates are disposed horizontally on one side of the illuminable gas, and parallel electrical conductors on the opposing glass plate are disposed vertically with the horizontal conductors being disposed orthogonally with respect to the vertical conductors. Conductors are disposed on the flexible sheet, and they are connected between electrical circuit components on the circuit board

and the vertical and horizontal conductors of the gas panel. The gas panel and the one or more circuit boards may be secured together as a compact unit, or they may be separated to permit cooling air to flow therebetween in which event apertures may be provided in the flexible sheet to facilitate air flow.

3,828,216

COLOR DISPLAY TUBE WITH ELONGATED PHOSPHOR DOTS AND SHADOW MASK APERTURES

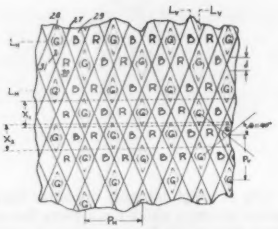
Yuzo Fuse, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 114,981, Feb. 12, 1971, abandoned. This application Jan. 16, 1973, Ser. No. 324,133

Claims priority, application Japan, Feb. 14, 1970, 45-12886

Int. Cl. H01j *29/06, 29/32*

U.S. Cl. 313—403 **6 Claims**



A shadow mask tube having elongated apertures arranged in rows with the ends of apertures in each row extending between apertures in the next row to improve light emission and eliminate moire patterns caused by scanning non-emissive areas.

3,828,217

SELF BALANCING ROTARY ANODE ARRANGEMENT FOR X-RAY TUBES

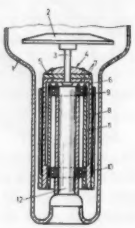
Johann Ebersberger, Markt Erlbach, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed May 3, 1973, Ser. No. 356,754

Claims priority, application Germany, May 26, 1972, 2225806

Int. Cl. F16f *15/12;* **H01j** *1/44, 35/10*

U.S. Cl. 313—149 **5 Claims**



A rotary anode arrangement for X-ray tubes wherein the anode plate and the driving rotor are connected with each other and are also connected with the connection of both outer rings of two bearings spaced from each other. Their inner rings lie upon a shaft constituting the rotary axis and located in a tubular piston. The invention is particularly characterized in that the driving rotor as well as the connection to the anode plate extend along the spacing between the two bearings and are fixed to the connection of the two bearings close to the edge of the bearing distant from the plate. At least a part of the connection between the plate and the attachment to the bearings consists of a tube with thin walls which constitutes a resilient element for selected sizes.

3,828,218

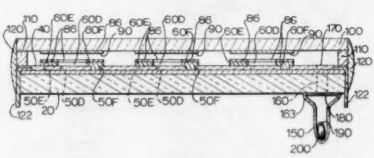
MULTI-POSITION CHARACTER DISPLAY PANEL

Richard Byrd Fehnel, Basking Ridge, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 224,069, Feb. 7, 1972. This application June 15, 1973, Ser. No. 370,533

Int. Cl. H01j *19/72*

U.S. Cl. 313—177 **21 Claims**



The display panel is gas-filled and includes a base plate on which a plurality of groups of cathodes and their conductors are formed, each group of cathodes being operable to display a character. The panel also includes a face plate, spaced from the base plate, and carrying transparent conductive anodes, each associated with one group of cathodes. The panel includes a tubulation secured to the base plate through which gas and mercury vapor are introduced into the panel through a hole in the panel base plate. A fine mesh nickel screen is disposed in the tubulation adjacent to the hole in the base plate to prevent an excess of free mercury from entering the panel and, at the same time, to provide a source of mercury by way of the mercury which amalgamates with the screen.

3,828,219

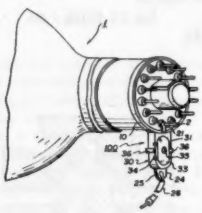
VOLTAGE SURGE DISSIPATOR

Christ J. Dumas, Forest View, and Stephen S. Simovits, Jr., Woodridge, both of Ill., assignors to American Plasticraft Company, Chicago, Ill.

Filed Sept. 7, 1972, Ser. No. 286,967

Int. Cl. H01j *17/00, 21/00*

U.S. Cl. 313—325 **27 Claims**



A transient voltage surge dissipating assembly for dissipating surges of high voltage electrical energy occuring at the terminal pins of an electron tube. The apparatus has a precisely formed air dielectric spark gap defined between an electrical connector coupled to a terminal pin of the electron tube and ground such that any over-voltage surges occurring at the terminal pins are precluded from arcing to an adjacent terminal pin, but are dissipated to ground through the spark gap assembly. The apparatus is adapted to be coupled to any individual terminal pin of an electron tube to provide protection to the tube and associated circuitry. Arcing between the terminal pins and any components is thereby eliminated preventing damage to the tube or associated electronic components.

3,828,220
APPARATUS FOR CONTROLLING THE INTENSITY OF VEHICLE HEADLAMPS

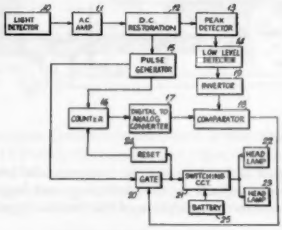
Ronald Leslie Moore, Ascot, and Dennis Geoffrey Wallace Mace, Camberley, both of England, assignors to The Secretary of State for the Environment in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 87,105, Nov. 5, 1970, abandoned. This application Nov. 20, 1972, Ser. No. 307,833

Claims priority, application Great Britain, Nov. 6, 1969, 54521/69

Int. Cl. B60q *1/08*

U.S. Cl. 315—82 **12 Claims**



Apparatus for controlling the intensity of light from the dip filaments of vehicle headlights in accordance with the intensity of street lighting is described. Signals from a light sensor on the vehicle are processed to remove any constant intensity component due to daylight for example so that the resultant signal depends only on a cyclically variable component due to the cyclic variation in the intensity of street lighting supplied from an a.c. supply. When a vehicle passes between street lamps the amplitude of the said variable component varies, and for this reason means are provided to control the electrical supply to the dip filaments so that the intensity of light from these filaments is inversely proportional to minima in the amplitude of the variable component. In the embodiments specifically described the supply is disconnected from the filaments for fixed periods, the repetition frequency of the periods being varied to satisfy the above mentioned condition.

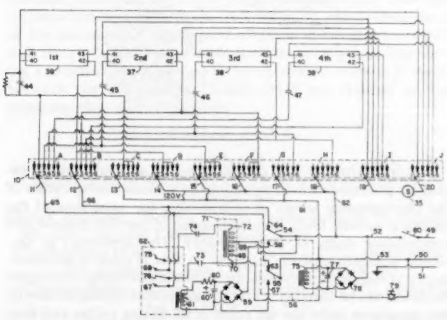
3,828,221
BALLAST CIRCUIT FOR A PLURALITY OF LAMPS

Joseph Spiteri, Erie, Pa., assignor to Rem Research, Inc., Erie, Pa.

Filed Aug. 29, 1972, Ser. No. 284,568

Int. Cl. H05b *37/00*

U.S. Cl. 315—161 **6 Claims**



A circuit for lighting a plurality of lamps requiring a temporary starting voltage and an operating voltage of a different value than the starting voltage. The starting voltage source is switched completely out of the line during operation. An impedance device is provided in series with the lamps which is preferably a capacitor. Since the starting voltage is turned on for only a short period of time, the starting voltage source may be of a small power output requirement compared with the main power source.

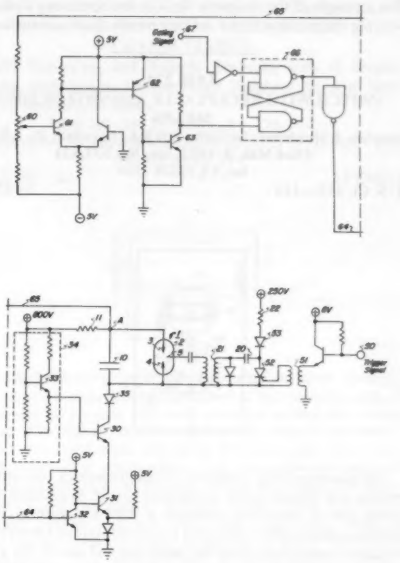
3,828,222
FLASH LAMP CIRCUIT

Lawrence J. Mason, Webster, N.Y., assignor to Xerox Corporation, Stanford, Conn.

Filed Feb. 20, 1973, Ser. No. 333,826

Int. Cl. H05b *37/00*

U.S. Cl. 315—241 P **3 Claims**



Circuitry for firing a flash lamp. Gating means in the charging path of the storage and trigger capacitors is selectively enabled only when these capacitors are to be charged. The gating means is disabled upon the terminating of charging. The disablement of the gating means before flashing allows the lamp to deionize before the re-application of power thereto.

3,828,223
PROCESS AND APPARATUS FOR VARYING THE POSITION OF THE ARC ROOT IN A PLASMA ARC SUITABLE FOR PRODUCING TITANIUM DIOXIDE PIGMENTS

George William New, Teesside, England, assignor to British Titan Limited, Billingham, England

Filed Aug. 30, 1972, Ser. No. 284,889

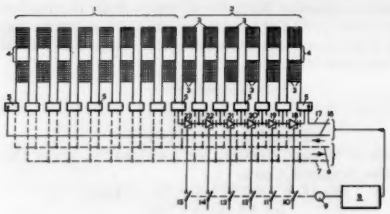
Claims priority, application Great Britain, Nov. 2, 1971, 50823/71

Int. Cl. H05b *41/16*

U.S. Cl. 315—267 **13 Claims**

An improved device and processes for prolonging the operating life of electrodes, for example in the production of TiO_2, comprising the provision around the electrode of a field

coil consisting of a primary coil and a number of secondary coils and means to divert power from one or more of the



secondary coils to the remaining coils while maintaining the flux strength of the magnetic field in the remaining coils thus varying the position of the arc root on the electrode surface.

3,828,224

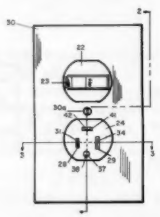
SWITCH WITH RECEPTACLE AND SWITCH SHUNT MEANS

Stephen J. Hulshizer, 14 Cedar Hill Rd., Lansdale, Pa. 19440

Filed Mar. 5, 1973, Ser. No. 337,831

Int. Cl. H02b *1/04*

U.S. Cl. 317—112 **14 Claims**



An electrical unit, system or circuit includes a conventional switch and a novel outlet receptacle having, in addition to the usual pair of slots with contacts, a third slot with a contact which is electrically connected to a switch contact whereby an external connection from the latter slot and one of the pair of slots will complete the circuit as though the switch had been closed. Novel electrical devices are designed to establish this external connection.

3,828,225

FAIL-SAFE VEHICLE-CARRIED ANTI-COLLISION PROTECTION RECEIVER

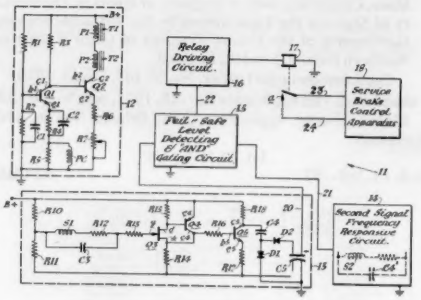
Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sept. 18, 1972, Ser. No. 289,768

Int. Cl. H01h *47/20*

U.S. Cl. 317—147 **10 Claims**

This disclosure relates to a fail-safe vehicle-carried anti-collision receiver for automatically applying and releasing the service brakes to control the movement of a vehicle. The receiver includes an electromagnetic inductive coil for normally picking up two a.c. signals from the wayside as the vehicle moves along its route of travel. The a.c. signals are amplified by a preamplifier and are individually transformer coupled to a pair of signal frequency responsive circuits each of which includes an amplifier and a rectifier. Each of the rectified d.c. output signals of the signal frequency responsive circuits is coupled to a separate input of an amplitude level detecting and logic circuit. The detecting and logic circuit produces a.c. oscillations which are amplified and rectified by a relay driving circuit. The rectified output of the relay driving circuit normally energizes a vital relay which maintains its back contacts open to deactivate the service brake control apparatus when and only when the presence and level of both of the d.c. input signals to the detecting and logic circuit are produced due to the reception of the two a.c. input signals.


Relay Driving Circuit.
Service Brake Control Apparatus
Fail-Safe Level Detecting & AND Gating Circuit
Second Signal Frequency Responsive Circuit.

3,828,226

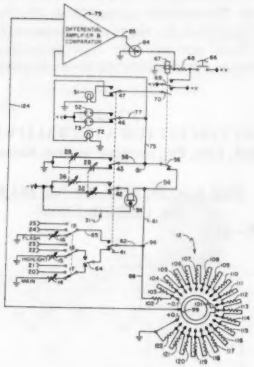
EXPOSURE OVERRIDE CONTROL

George Pamlenyi, St. Paul, Minn., assignor to Chesley F. Carlson, Co., Minneapolis, Minn.

Filed Dec. 20, 1972, Ser. No. 316,672

Int. Cl. H01h *47/24*

U.S. Cl. 317—124 **11 Claims**

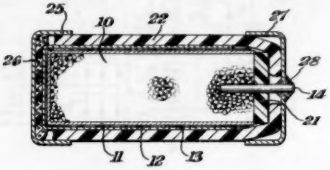


Apparatus for use with continuous tone and halftone photographic processes which modifies the various timing cycles of the photographic lamps to compensate for variations of the chemical activity level, emulsion speed of the film utilized and temperature shifts of the chemistry. The apparatus as disclosed is logarithmically variable so that if control measurements of system density indicate a shift in operating conditions the error can be directly set on the apparatus. Manipulation of the apparatus shifts the set point of all timing cycles and thus enables the operator with one setting to proportionately vary the timing cycle for each photographic lamp used in the photographic process.

3,828,227
SOLID TANTALUM CAPACITOR WITH END CAP TERMINALS

Richard J. Millard, Kennebunk, and David R. Poat, Wells, both of Maine, assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 9, 1973, Ser. No. 349,146
Int. Cl. H01g 9/00
U.S. Cl. 317—230 **5 Claims**

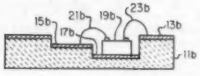


A solid tantalum electrolytic capacitor is described, having a protective TEFLON sleeve sealed at either end by two solderable metal end caps each serving as one of the capacitor terminals. This capacitor is thus suitable for flush mounting by reflow soldering to a hybrid integrated circuit substrate.

3,828,228
MICROWAVE TRANSISTOR PACKAGE

Roger W. Wong, Santa Clara, and Ronald D. Stewart, Ben Lomond, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 5, 1973, Ser. No. 337,965
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R **3 Claims**



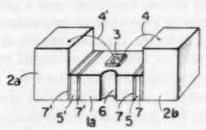
A package for containing a microwave transistor chip is constructed so that a surface on which the transistor chip is to be mounted is recessed below a metallized surface which serves as an electrical ground. By means of this construction, a mounted transistor chip will be positioned with its top surface just below the plane of the electrical ground surface. Thus, the leads which connect the transistor to the electrical ground surface may be very short, thereby reducing the occurrance of package parasitics, and in particular minimizing the spurious common emitter inductance. According to one embodiment of the invention, a cap is used which is in electrical contact with the electrical ground surface of the package, the cap having a recessed inner portion to assure that no contact is made between the cap and any leads which are bonded to the transistor chip and the package.

3,828,229
LEADLESS SEMICONDUCTOR DEVICE FOR HIGH POWER USE

Shinzo Anazawa, Shoichi, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Continuation of Ser. No. 259,206, June 2, 1972, abandoned. This application June 4, 1973, Ser. No. 366,275
Claims priority, application Japan, June 10, 1971, 46-41582
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R **4 Claims**

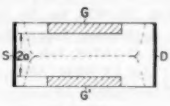
A leadless semiconductor device includes an electrically conductive substrate to which a semiconductor element is fixed. The substrate is insulated from a pair of conductive wall members by means of insulating material arranged intermediate the ends of the substrate and the wall members. The semiconductor element electrodes are electrically connected to the wall members.



3,828,230
FIELD EFFECT SEMICONDUCTOR DEVICE HAVING AN UNSATURATED TRIODE VACUUM TUBE CHARACTERISTI

Jun-Ichi Nishizawa, and Takeshi Terasaki, both of Sendai, Japan, assignors to Zaidan Hojin Hondotai Kenkyn Shinkokai, Sendai-ken, Japan

Filed July 28, 1972, Ser. No. 276,102
Claims priority, application Japan, July 31, 1972, 46-57768
Int. Cl. H01c 7/14
U.S. Cl. 357—22 **12 Claims**

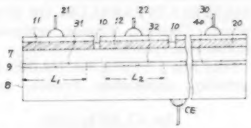


A field effect transistor comprises a semiconductor channel, a source and a drain electrode formed at the opposite ends of the channel and a gate electrode provided on the side of the channel. The channel has a small impurity density and therefore the depletion layer extending from the gate goes deep into the channel to substantially close the conductive portion of the channel even in the absence of a gate voltage. The drain current will not flow where the drain voltage is below a certain threshold voltage, and will flow where the drain volage is above the threshold voltage exhibiting a linear resistance characteristic. This drain-current to drain-voltage characteristic simulates the anode-current to anode-voltage characteristic of the triode vacuum tube very closely.

3,828,231
LIGHT AMPLIFIER USING A SEMICONDUCTOR

Takaya Yamamoto, Yokohama, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 18, 1972, Ser. No. 315,834
Claims priority, application Japan, Dec. 20, 1971, 46-102627
Int. Cl. H01l 15/00
U.S. Cl. 357—30 **3 Claims**



A light amplifier using a semiconductor, in which an elongated single semiconductor PN junction is used for amplifying

an input light injected at an input face provided at one end of the PN junction along the junction plane of the PN junction. The semiconductor PN junction is driven by bias signals applied at a common ohmic electrode and a plurality of ohmic electrodes respectively provided at opposite sides of the PN junction with respect to the junction plane. A plurality of the ohmic electrodes are sequencially arranged overlying the PN junction in a longitudinal direction and are electrically isolated from one another, so that a plurality of discrete regions are provided in the PN junction corresponding to the respective electrodes. Two adjacent regions are employed as one unitary region and are driven by predetermined different forward bias currents to bias one of the two regions as an amplifying region and the other of the two regions as a saturable absorbing region. The amplifying region is disposed at the input side while the saturable absorbing region is disposed at the output side in each unitary region. The respective unitary regions are connected in cascade to provide a plurality of the unitary regions.

3,828,232

SEMICONDUCTOR TARGET

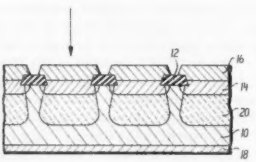
Yashuhiro Horiike, Tokyo; Shunji Shirouzu, Kanagawa-ken; Shigeo Tsuji, Fujisawa, and Nozomu Harada, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Company, Ltd.

Filed Feb. 28, 1973, Ser. No. 336,452

Claims priority, application Japan, Feb. 28, 1972, 47-19704; Feb. 28, 1972, 47-19705; Feb. 28, 1972, 47-19706

Int. Cl. H01l *15/00*

U.S. Cl. 357—89, 357—90, 357—14 **7 Claims**



A semiconductor target comprises a semiconductor substrate and a diode array patterned on the substrate. Diodes are isolated from each other by an insulating film. A p-n junction plane of the diodes is designed to lie over the boundary plane of the substrate and the insulating film.

3,828,233

SWITCHING ENABLING TWO ELECTRICAL MACHINES TO MOTOR OR REGENERATE WITH THEIR ARMATURES IN PARALLEL OR IN SERIES

Michel Brulard, Clamart, France, assignor to Jeumont Schneider, Puteaux, France

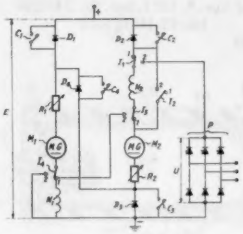
Filed July 27, 1973, Ser. No. 383,402

Claims priority, application France, July 31, 1972, 72.27495

Int. Cl. H02p *3/00*

U.S. Cl. 318—87 **5 Claims**

System enabling two d.c. machines to change over rapidly from operation as series wound motors to operation as independently excited generators regenerating to a main power supply. The system mainly comprises a four-pole changeover and disconnecting switch which connects inductors in series either with their respective armature or with an auxiliary power supply, and four diodes shunted by four contactors. Of use in electric driving vehicles and locomotives for regenerative braking to the main power supply.



3,828,234

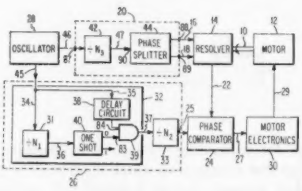
MOTOR SPEED CONTROL SYSTEM

Edwin Allen Goldberg, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 14, 1973, Ser. No. 359,900

Int. Cl. H02p *5/16*

U.S. Cl. 318—314 **5 Claims**



The speed of a motor is controlled by utilizing an error signal from a phase comparator as the motor energizing source. The phase comparator error signal is a result of a phase comparison between a motor related signal and a reference signal having a phase which varies in a predetermined manner as a function of time.

3,828,235

VARIABLE DUTY CYCLE TRACTION MOTOR CONTROL PROVIDING CONTROLLED PLUGGING

Raymond G. Price, Franklin, and Frederick A. Stich, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

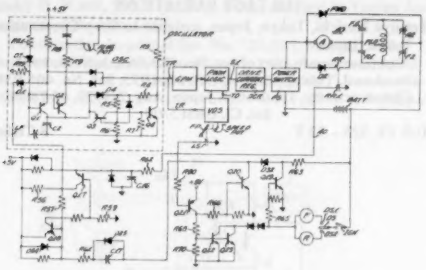
Filed Apr. 9, 1973, Ser. No. 349,562

Int. Cl. H02p *3/10*

U.S. Cl. 318—373 **25 Claims**

A vehicle driven by a reversible electric traction motor controlled by variable duty cycle current pulses from a battery reduces the frequency of oscillator triggering pulses when the direction selection lever is reversed and the motor is being driven as a generator in order to reduce field excitation and provide smooth plugging when vehicle direction is reversed

but does not change triggering pulse frequency if the motor is driven as a generator when the vehicle is rolling backward



down a ramp and full tractive power is required. A plugging potentiometer permits setting the maximum severity of plugging.

3,828,236

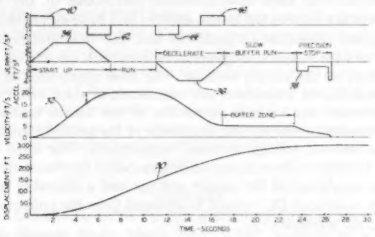
LINEAR MOTOR ACCELERATION CONTROL SYSTEM

David E. Close, Denver, Colo., assignor to Transportation Technology, Inc., Denver, Colo.

Continuation of Ser. No. 150,611, June 7, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,794

Int. Cl. G05b *13/00*

U.S. Cl. 318—561 **6 Claims**



A control system for programming and executing the displacement characteristics of a transit vehicle propelled by one or more linear motors. Computers are provided for planning speed change points to operate within the program without exceeding maximum acceleration and jerk limits. A precision stop function is carried out in an adaptive manner by control of motor thrust.

3,828,237

FUEL-AIR RATIO CONTROLLER

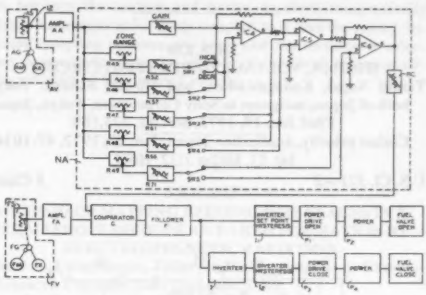
Wen H. Ko, Cleveland Heights; James R. Knodel, Parma, and Chih Piao Hung, Berea, all of Ohio, assignors to North American Manufacturing Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 354,338, April 25, 1973, abandoned. This application July 11, 1973, Ser. No. 378,249

Int. Cl. G05b *11/01*

U.S. Cl. 318—619 **10 Claims**

An electronic valve characterizer for fuel-air ratio control wherein the primary valve may be arbitrarily set and the secondary valve or valves are actuated by a slave motor or motors to a predetermined ratio of fuel to air for any setting of the primary valve. The primary and secondary valves are each controlled by motor-actuated valves, each having a slide wire and a slide. The secondary slide is set to operate at a speed in excess of the primary slide. The signal from the primary slide is passed through an amplifier having adjustable rates of amplification in each of a series of adjustable sectors of the movement of the primary slide. The amplified signal is compared



with an amplified secondary slide signal and the secondary motor energize to bring the amplified secondary slide signal into general equality with the amplified primary slide signal.

3,828,238

NUMERICALLY CONTROLLED MACHINE TOOL INCLUDING BACKLASH ELIMINATION

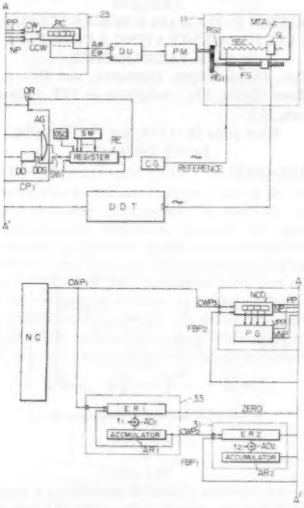
Kengo Kobayashi, Kawasaki, and Mitsuo Manabe, Tokyo, both of Japan, assignors to Funitsu Limited, Kanagawa-ken, Japan

Filed Apr. 20, 1972, Ser. No. 245,885

Claims priority, application Japan, Apr. 22, 1971, 46-26372

Int. Cl. G05b *11/01*

U.S. Cl. 318—630 **5 Claims**



A method of numerically controlling a machine through a servo system, a movable part of the machine being controlled in its displacement to a desired position according to a command pulse train, in which method the gain of the servo system is momentarily heightened when a change of direction

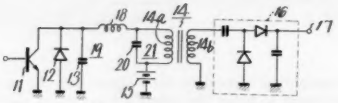
of movement of the movable part of the machine is required during the control operation, so that the mechanical backlash of the machine is rapidly taken up to shorten dead time in the control operation.

3,828,239

HIGH DC VOLTAGE GENERATING CIRCUIT

Tamiji Nagai, Kanagawa-ken, and Hiroshi Sahara, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 19, 1973, Ser. No. 325,150
Claims priority, application Japan, Jan. 27, 1972, 47-10145
Int. Cl. H02m *3/32*; H01j
U.S. Cl. 321—2 **8 Claims**



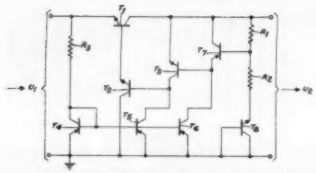
A high DC voltage generating circuit is provided with an impedance element connecting a switching element with the primary winding of a fly-back transformer, and a capacitive element is connected to the primary winding of the fly-back transformer to form a resonance circuit therewith, so that the fly-back transformer delivers, as its output, a sinusoidal high voltage which is subjected to a voltage doubler rectification to provide a high DC voltage with improved regulation.

3,828,240

MONOLITHIC INTEGRABLE SERIES STABILIZATION CIRCUIT FOR GENERATING A CONSTANT LOW VOLTAGE OUTPUT

Hans Keller, Gundelfingen, Germany, and Henry M. Kleinman, Boca Raton, Fla., assignors to ITT Industries, Inc., New York, N.Y.

Filed June 26, 1973, Ser. No. 373,696
Int. Cl. G05f *1/58*
U.S. Cl. 323—22 T **4 Claims**



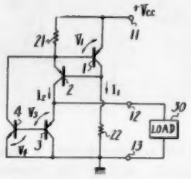
A series stabilization circuit for generating a regulated voltage in the order of one volt. In order to reduce variations in the output voltage due to changes in temperature, the reference voltage used is a combination of the outputs of two reference voltage sources. The first reference source has a negative coefficient of voltage such that its output will decrease when temperatures increase. The second reference source has a positive coefficient of voltage such that its output will increase as temperatures increases thereby resulting in a balanced overall reference voltage.

3,828,241

REGULATED VOLTAGE SUPPLY CIRCUIT WHICH COMPENSATES FOR TEMPERATURE AND INPUT VOLTAGE VARIATIONS

Tetsuya Horichi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 383,569, July 30, 1971, abandoned. This application Oct. 10, 1973, Ser. No. 405,039
Claims priority, application Japan, Aug. 7, 1972, 47-78888
Int. Cl. G05f *5/00*
U.S. Cl. 323—22 T **8 Claims**



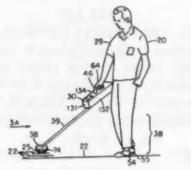
A regulated voltage supply circuit including first, second and third transistors of one conductivity type and a fourth transistor of the opposite conductivity type connected in a specific configuration. The emitter-collector path of the second transistor and the emitter-collector path of the third transistor are connected in series between the first and second voltage terminals of a voltage supply source. The emitter-collector path of the first transistor is connected between the first and second voltage terminals in parallel with the series connected emitter-collector paths of the second and third transistors. The base and collector electrodes of the first transistor are connected to the emitter and base electrodes of the second transistor respectively and the first and second transistors form a first degenerative feedback circuit for the regulation of the supply voltage. The base electrodes of the third and fourth transistors are connected to each other and the collector and emitter electrodes of the fourth transistor are connected to the emitter electrode of the second transistor and the second voltage terminal respectively. The third and fourth transistors form a second degenerative feedback circuit for the regulation of the supply voltage and a desirably regulated or stabilized DC voltage is obtained from the collector of the second transistor.

3,828,242

ELECTROMAGNETIC INDUCTION EXPLORATION GUIDE ASSEMBLY

Robert M. Vann, 2906 S. Woodland, Amarillo, Tex. 79103

Filed July 18, 1972, Ser. No. 272,984
Int. Cl. G01v *3/08*
U.S. Cl. 324—3 **5 Claims**

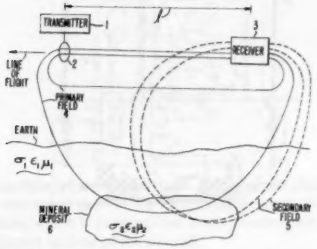


An externally smooth and convex and axially symmetrical and resilient, abrasion resistant and electro-magnetically transparent ground contacting coil guide assembly is firmly attached to the search or exploring coil of a metal and mineral detector to provide constant spacing and orientation of that coil relative to the mass of ground to be explored.

3,828,243
APPARATUS AND METHOD FOR ELECTROMAGNETIC GEOPHYSICAL EXPLORATION

Stanley H. Ward, Salt Lake City, Utah, assignor to Varian Associates, Palo Alto, Calif.

Continuation-in-part of Ser. No. 725,605, May 1, 1968, abandoned. This application Aug. 30, 1971, Ser. No. 175,905
Int. Cl. G01n *27/78*; **G01v** *3/16*
U.S. Cl. 324—0.5 R **7 Claims**

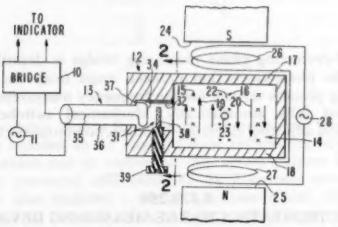


The frequency range, particularly at lower frequencies and sensitivity of conventional electromagnetic geophysical exploration apparatus is improved by provision of an optically pumped alkali-vapor magnetometer in place of the conventional induction coil receiver. The magnetometer provides a frequency modulated output precession signal as a function of the intensity of a time-varying secondary magnetic field produced by a time-varying primary magnetic field. The magnetometer output is substantially independent of the frequency of the magnetic field being measured over the frequency range of primary interest. The time-varying primary magnetic field is also used to develop a reference signal which when combined with a signal from the magnetometer results in the development of the in-phase and quadrature components of the time-varying secondary magnetic field for use in determining the parameters of conductivity, permittivity and permeability of geophysical bodies under investigation.

3,828,244
COAXIAL LINE TO MICROWAVE COUPLER

James Stewart Hyde, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed June 14, 1973, Ser. No. 370,177
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **4 Claims**

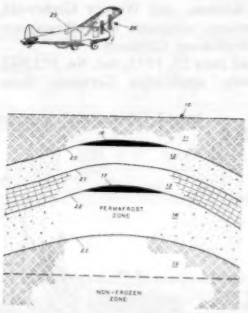


A variable microwave coupler between a coaxial line and an EPR microwave cavity. A housing includes the resonant cavity as well as a section dimensioned to be a waveguide. Energy from the coaxial line is coupled into this section. The section is dimensioned to be a waveguide beyond cutoff and it has an opening into the resonant cavity. A planar loop located in the section is connected to be excited by the energy in the line. The loop is rigidly positioned so that its plane is substantially at right angles to a microwave magnetic field in the cavity. A microwave energy radiator is positioned in the section to be inductively coupled with the microwave energy from the loop. The radiator is positioned in the section, adjacent an intersection between the section and cavity, to electromagnetically radiate the energy inductively coupled to it into the cavity. Inductive coupling between the loop and the radiator is selectively controlled to vary the amount of energy electromagnetically radiated by the radiator into the cavity.

3,828,245
METHOD OF MAPPING BEDDING INTERFACES IN A PERMAFROST ZONE OF AN EARTH FORMATION BY ELECTROMAGNETIC RADIATION

Robert R. Unterberger, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 626,085, March 27, 1967, abandoned. This application Oct. 4, 1971, Ser. No. 186,377
Int. Cl. G01v *3/12, 3/16*
U.S. Cl. 324—6 **2 Claims**



A method for accurately and quickly mapping the location of bedding interfaces in the permafrost zone of an earth formation from a movable vehicle, say an aircraft, by transmitting electromagnetic radiation through the permafrost zone from a known geographic position on or above the permafrost's surface, detecting a portion of energy reflected from each bedding interface of the permafrost zone and recording the two-way travel time of the energy reflected from each of the bedding interfaces so as to indicate distance — and hence location — of each bedding interface with respect to the known location of the electromagnetic radiation system.

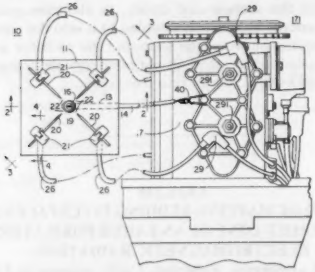
3,828,246
SPARK TESTER

Charles Maynard, 2202 River Rd., Constance, Ky. 41009

Filed Aug. 9, 1973, Ser. No. 386,989
Int. Cl. G01r *13/42*
U.S. Cl. 324—18 **6 Claims**

A spark tester having a base plate of insulating material. A central post carries a sharp edged disc electrode. Clamps surround the post and carry needle-pointed radially extending electrodes. Fasteners for the post and clamps extend into upright sockets in the base plate. Transverse bores intersect

the upright sockets. Fasteners for the clamps engage cable conductors in associated transverse bores with cable insulation extending into the transverse bores. A ground wire extends into the transverse bores associated with the post to ground the disc electrode.



3,828,247

TESTING A FUEL INJECTION VALVE

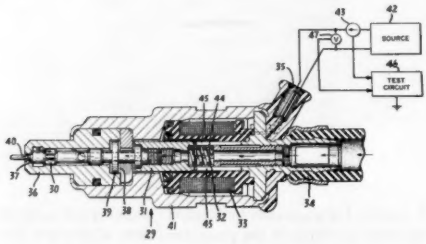
Kalus Kirsch, Rennau, and Werner Grotewold, Flechworf, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed June 25, 1973, Ser. No. 372,942

Claims priority, application Germany, June 28, 1972, 2231630

Int. Cl. G01r *31/02*

U.S. Cl. 324—28 R **15 Claims**



An electromagnetic device such as a fuel-injection valve is tested by monitoring the variation in the impedance of the electric coil of the device as it operates. The change in impedance of a properly-operating device can be converted into a generally decaying voltage signal with a series of small voltages peaks. An inoperative device will not produce these voltage peaks. The voltage peaks are converted into pulses and then counted. If more than two pulses are detected the device is operating properly.

3,828,248

APPARATUS FOR MEASURING A PREDETERMINED CHARACTERISTIC OF MOVING SHEET MATERIAL WHICH ACCOMMODATES BOTH TILTING AND CHANGES IN THICKNESS AND VERTICAL LOCATION OF THE MATERIAL

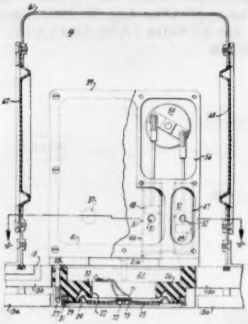
Gunnar Wennerberg, 1641 Poppy Way, San Jose, Calif. 95129

Continuation-in-part of Ser. No. 105,350, Jan. 14, 1971, abandoned. This application Apr. 21, 1972, Ser. No. 246,188

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 TK **18 Claims**

Apparatus for sensing the thickness of sheet materials such as paper is in the form of a gauge having opposed rubber diaphrams which are actuated into mutual engagement with the moving sheet material by associated air pumps. Mounted on the diaphragms are magnetic circuit means which include a ferrite core and an inductive coil whose inductance is affected by the gap caused by the paper which is part of the magnetic flux path. The coil of the ferrite core is coupled to an oscillator whereby the resonant frequency of the oscillator indicates the gap distance and thus, the thickness of the sheet material.



3,828,249

SELF-CORRECTING PHASE MEASURING BRIDGE

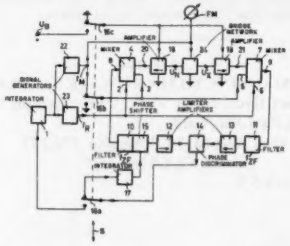
Karl Alber, and Volker Seifert, both of Bremen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 12, 1973, Ser. No. 331,779

Claims priority, application Germany, Feb. 18, 1972, 2207551

Int. Cl. G01r *27/00, 23/00*

U.S. Cl. 324—57 R **7 Claims**



A self-correcting phase measuring bridge is described in which the phase-correction process, apart from the phase balancing process serving for the frequency measurement, is performed fully automatically. Mechanical switches and mechanical adjusting elements for correction purposes are not required.

3,828,250

ELECTROSTATIC CHARGE MEASURING DEVICE

Rudolf G. Buser, Wall, and Helmuth M. Kaunzinger, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

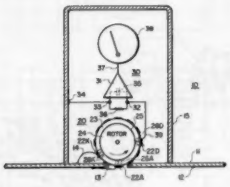
Filed July 2, 1973, Ser. No. 376,022

Int. Cl. G01r *31/02*

U.S. Cl. 324—72 **6 Claims**

This disclosure relates to field strength meters and particularly to meters for detecting and indicating the strength of an electrostatic field in the vicinity of an aircraft. More particu-

larly, this invention relates to a device that uses the inverse of the Van der Graaf generator principle for charging a series of plates, successively, to the potential of a given area of the



outer surface of an aircraft and carrying the charged plates within the metal shell of the aircraft to measure the charge on the plates, which is proportional to the electrostatic charge on the adjacent surface of the aircraft.

3,828,251

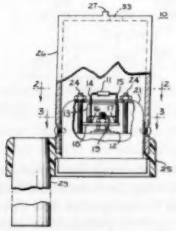
PORTABLE MICROWAVE RADIATION SENSING AND MEASURING DEVICE

Robert F. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 252,626, May 12, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,444

Int. Cl. G01r *23/04*

U.S. Cl. 324—72 **3 Claims**



A portable device for sensing and measuring microwave energy includes an RF diode to sense the electric field of the microwaves and to convert it into direct current which is readily measured and indicated by a current meter. The device also includes a metal radiation shield interposed between the detector diode and the meter to insure that the current measured is due only to that microwave energy incident upon the diode. The diode is mounted within a radiation permeable protective casing which is shaped so as to locate the detector diode at a uniformly fixed distance and orientation with respect to the surface being measured for radiation leakage. The case may also be adapted to accept an elongated handle so that measurements may be made without placing the operator in the field of any possible leakage of radiation.

3,828,252

METER WITH AUDIBLE READ-OUT

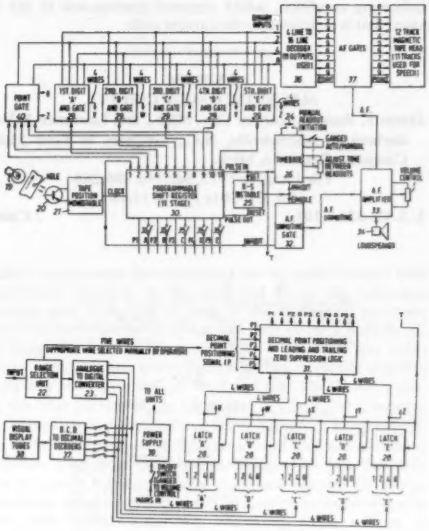
Heinz Wolff, London, England, assignor to W. Winter Limited, Edmunds, Suffolk, England

Filed Nov. 28, 1972, Ser. No. 309,953

Claims priority, application Great Britain, Nov. 29, 1971, 55229/71

Int. Cl. G01r *17/06, 13/00*

U.S. Cl. 324—99 D **5 Claims**



A meter with means for audible read-out including a plurality of words to be audibly read out, these words being recorded on a magnetic medium, and electronic means to select the appropriate words, and to synchronize the read-out.

3,828,253

QUANTIZED INDICATION ARRANGEMENT

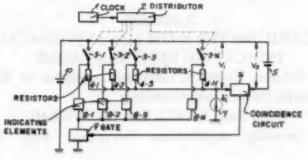
Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 7, 1972, Ser. No. 286,988

Claims priority, application Japan, Sept. 11, 1971, 46-70510

Int. Cl. G01r *17/06;* **G01j** *1/44*

U.S. Cl. 324—99 D **9 Claims**



A quantized indicating unit. A controllable constant current source is connected in a circuit path for current flow. A plurality of parallel resistors are provided, together with means for selectively coupling any one of the resistors into the path for current flow. A scanner sequentially scans through a sequence of states. A coupling means responds to each dif-

ferent one of the states for coupling at least one different resistor into the current path, thereby causing, for each of the states, a signal on the coupled resistor corresponding to the amount of the current flow and to the coupled resistor. A source of reference signals is provided, together with a comparing circuit for comparing the signal with the reference signal. An indicating element is provided for each of the resistors. A gate is coupled to the scanner and the comparing means and is responsive to a correspondence detected by the comparing means for switching an indicating element into an indicating condition, which element corresponds to the resistor that is coupled into the current path.

3,828,254

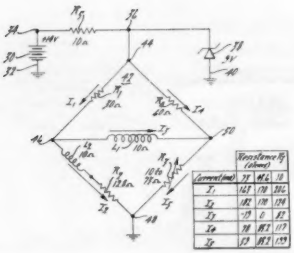
MAGNETIC GAUGE CIRCUIT

James F. Burgett, Garden City, Mich., and Lawrence J. Vanderberg, Hendersonville, N.C., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1973, Ser. No. 386,268

Int. Cl. G01r *17/10, 11/30*

U.S. Cl. 324—101 **7 Claims**



An electrical bridge magnetic gauge circuit includes a magnetic gauge having at least two coils for producing magnetic fluxes and having movable indicating means responsive to the vector resultant of the magnetic fluxes. The gauge coils are connected in a four-terminal bridge circuit. One of the coils is connected across opposite terminals of the bridge circuit, and the other coil is connected between adjacent bridge terminals. A variable resistance, responsive to a variable parameter to be indicated by the movable indicating means of the gauge, is also connected between adjacent bridge terminals. Changes in the variable resistance causes an increase in the current in one of the gauge coils and a simultaneous decrease in the current in the other gauge coil. Preferably, the current in one of the gauge coils reverses in direction as the variable resistance is varied between its minimum and maximum values.

3,828,255

ELECTRIC METER WITH LOGARITHMICALLY INDICATING DIGITAL READER

Eberhard Schuon, Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

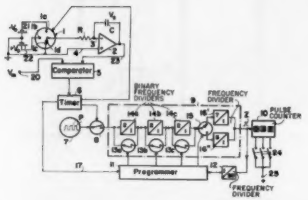
Filed Aug. 7, 1972, Ser. No. 278,640

Claims priority, application Germany, Aug. 5, 1971, 2139126

Int. Cl. G01r *15/10, 17/06*

U.S. Cl. 324—132 **10 Claims**

A variable voltage to be logarithmically indicated is fed to an input of an operational amplifier acting as a constant-current source in charging or discharging a capacitor at a constant rate determined by the magnitude of that voltage. The time required for the capacitor to charge or discharge from a reference potential to a potential equal or proportional to the variable voltage (or vice versa) is measured by a digital counter to which the output of a constant-frequency pulse generator is supplied, during the charging or discharging interval, through a binary frequency divider with a multiplicity of cascaded binary stages which are progressively cut in or out by a programmer responding to a predetermined number of pul-



ses in the divider output, thereby modifying the pulse rate in the divider output in discrete steps by a factor of 2. Intermediate steps, designed to provide a closer approach to a logarithmic function, involve the alternate insertion of two final stages of stepdown ratio 5:1 and 7:1 in cascade with the binary stages to establish a pulse-rate modification by a factor of approximately $\sqrt{2}$.

3,828,256

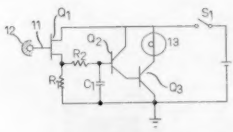
SELF CONTAINED TEST PROBE EMPLOYING HIGH INPUT IMPEDANCE

Ching-Chung Liu, No. 69 Tung Shan St., Hsin Chu, China /Taiwan

Filed May 13, 1971, Ser. No. 143,255

Int. Cl. G01r *19/16, 31/02*

U.S. Cl. 324—133 **4 Claims**



An apparatus for detecting the conduction state of a conductor without touching the conductor with a probe, in which a circuit connected to the probe and operating an indicator means, has a high input impedance in order to readily detect and employ advantageously any stray capacitance between the conductor and the probe.

3,828,257

VHF-UHF VARACTOR TUNING SYSTEM INCORPORATING AUTOMATIC FREQUENCY CONTROL WITH EQUALIZATION

Jeffrey A. Puskas, Glendale Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

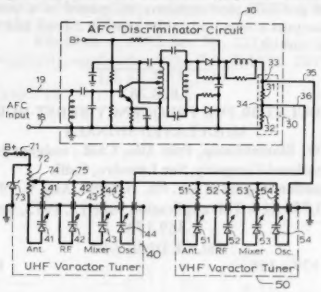
Filed Aug. 10, 1972, Ser. No. 279,610

Int. Cl. H04b *1/16*

U.S. Cl. 325—418 **3 Claims**

A VHF and UHF tuning system, comprising VHF and UHF varactor tuners, has an unbalanced AFC discriminator with a voltage divider across its output. The high voltage terminal of the divider is connected to the anode of the VHF tuner heterodyne oscillator varactor and the low voltage terminal is connected to the anode of the UHF tuner heterodyne oscilla-

tor varactor. A tuning voltage is applied independently of the AFC voltage to the cathodes of all tuning system varactors. As

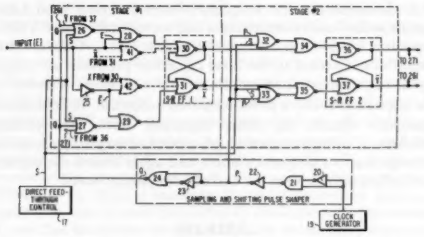


a result, only the tuner heterodyne oscillators are controlled by the discriminator and automatic AFC equalization is provided by the voltage divider.

3,828,258
SIGNAL DURATION SENSING CIRCUIT

Vernon Elton Hills, Hightstown, and Leesui Wu, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,298
Int. Cl. H03k *5/20*
U.S. Cl. 328—111 **10 Claims**



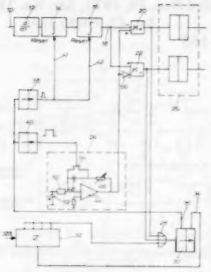
A circuit for producing output levels having a first or a second binary significance in response to input signals having a first or a second value, respectively, for a period greater than T. The circuit includes means for sampling and storing the input signal in response to a sampling pulse followed in a time T by a shift pulse. The circuit also includes means feeding back the output of the circuit to its input for preventing any input signal whose duration is less than T from altering the state of the output. The circuit also includes means for overriding the sampling, shifting and feedback controls for passing all input signals to the output of the circuit with very little delay.

3,828,259
PEAK DETECTOR

Lothar H. Riethmuller, Oberuhldingen; Richard Sponholz, Mulhofen; Hans Kiefer, and Ernst Spreitzhofer, both of Nubdorf, all of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen/Bodensee, Germany

Filed Feb. 7, 1973, Ser. No. 330,242
Claims priority, application Germany, Feb. 17, 1972, 2207315
Int. Cl. H03k *5/153, 17/30*
U.S. Cl. 328—151 **8 Claims**

A known peak detector for detection of peaks in an input signal includes a signal integrator for integrating the signal change over successive short measuring intervals which integrator is reset to zero at the end of each interval and also in-

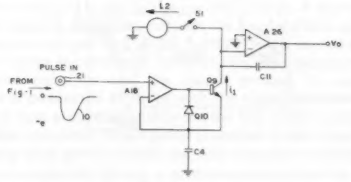


cludes a comparator for comparing the integrator output with a reference quantity. In the disclosed device the reference quantity rises with time in each of the measuring intervals. Since the contribution of a base line shift yields a linearly rising integrator output, the comparator is therefore less sensitive to such base line shifts. Preferably the reference quantity starts at a non-zero constant level and then rises linearly during the later portion of the measuring interval. The comparators therefore do not mistake either noise (which is typically in the form of very short fluctuations so as to yield a sudden moderate plateau in the integrator output) or base line drift (which causes a linearly rising integrator output) for a true peak in the input signal, since the integral of the beginning of a true peak having constantly increasing slope will be a quadratically rising signal (so that it crosses the reference quantity straight line signal before the end of the measuring interval).

3,828,260
HEMATOCRIT MEASURING APPARATUS

Raymond D. Underwood, Saratoga, Calif., assignor to Royco Instruments, Inc., Menlo Park, Calif.

Filed Apr. 2, 1973, Ser. No. 346,876
Int. Cl. G01n *27/02;* **H03k** *5/153*
U.S. Cl. 328—151 **1 Claim**



A hematocrit measuring apparatus processes pulses whose amplitude represents blood cell volume by a two stage analog storage process where peak pulse amplitudes are sequentially detected by the first stage and thereafter summed in the second stage. Noise immunity is also provided by a pulse height discriminator which enables the transfer between stages.

3,828,261

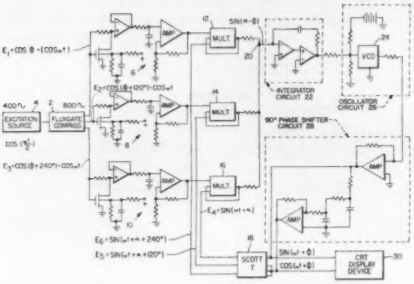
SOLID STATE COMPASS FOLLOWER

Donald C. Glynn, West Lake Village; Andrew M. Chao, Monterey Park, and George E. Carter, Panorama City, all of Calif., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 29, 1972, Ser. No. 319,424

Int. Cl. H03b *3/04*

U.S. Cl. 328—155 **5 Claims**



In a compass display system, a compass follower for insuring that true north is always at the top of the display. Solid state equipment is provided for correlating the compass outputs with a reference signal and for operating on the correlated output in a phase locked loop. An auxiliary loop is provided in which the compass follower output is phase locked to an external reference to render said output independent of compass excitation.

3,828,262

DEVICE FOR THE AUTOMATIC ADJUSTMENT OF THE AMPLITUDE OF SIGNALS

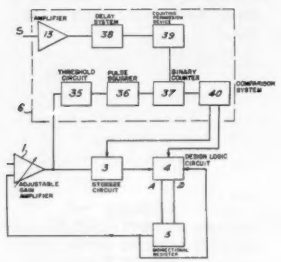
Francois Jean Trocqueme, Landorthe, France, assignor to Enterprise De Recherches D'Activites Petrolieres Elf, Paris, France

Filed Apr. 16, 1973, Ser. No. 351,560

Claims priority, application France, Apr. 20, 1972, 72.14006

Int. Cl. H03k *5/20*

U.S. Cl. 328—175 **8 Claims**



Automatic adjustment of amplitude is carried out on any predetermined half-wave of a recurrent analog signal by means of a device comprising a variable-gain amplifier, a storage circuit for indicating the amplitude of each output signal of the amplifier, a decision logic circuit which assumes a logical state A if the indicated amplitude does not attain a lower threshold level or a logical state D if the indicated amplitude exceeds an upper threshold level, a bidirectional register and a synchronization and control logic system in which means placed at the output of the amplifier eliminate signals smaller in amplitude than a predetermined value and transmit signals to a counter, the state of which is compared with two series of pre-indicated numbers by means of a comparator having outputs connected to the storage circuit and the decision logic circuit.

3,828,263

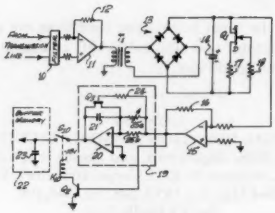
DEMODULATOR FOR FREQUENCY-BURST-DURATION MODULATED SIGNALS

Robert W. Blomenkamp, Palo Alto, Calif., assignor to Physics International Company, San Leandro, Calif.

Continuation-in-part of Ser. No. 169,988, Aug. 9, 1971, Pat. No. 3,754,215. This application June 12, 1973, Ser. No. 369,170

Int. Cl. H03k *9/08*

U.S. Cl. 329—106 **12 Claims**



A demodulator for frequency-burst-duration modulated signals is disclosed comprising a full-wave rectifier and a filter capacitor coupled to an input bandpass filter. A differential amplifier connected to the filter capacitor produces an output signal of predetermined amplitude while a charge is stored in the capacitor above a predetermined minimum. A field-effect transistor shunts the filter capacitor until the rectifier produces a voltage output which tends to charge the capacitor in response to a frequency burst, and again shunts the capacitor for fast discharge at the end of a frequency burst.

3,828,264

DEVICE FOR OPTICAL AMPLIFICATION OF A COHERENT SIGNAL

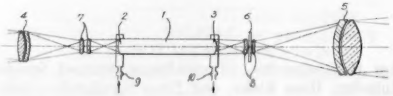
Wolfgang Friedl, Neckargemund, and Claus Aberle, Manheim, both of Germany, assignors to Eltro GmbH & Co., Heidelberg, Germany

Filed Dec. 29, 1974, Ser. No. 319,856

Claims priority, application Germany, Dec. 29, 1971, 2165270

Int. Cl. H01s *1/02*

U.S. Cl. 330—4.3 **5 Claims**

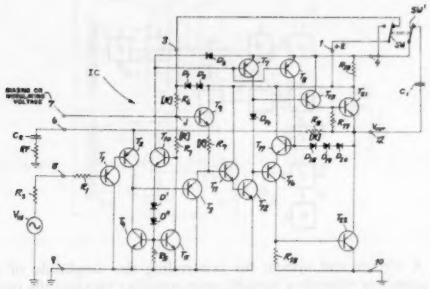


A device for optical amplification of a coherent signal comprising a laser composed of a bundle of fibres which are individually pumped simultaneously. The fibres are constituted as gradient fibres. An objective is located behind the bundle and a frequency filter is secured to the bundle and mounted at the Fourier plane of the objective. An auto-collimator may be provided for the amplified coherent light beams.

3,828,265
LOW FREQUENCY POWER AMPLIFIER

Aldo Romano, Milan, Italy, assignor to ATES Componenti Elettronici S.p.A., Milan, Italy

Filed Feb. 4, 1972, Ser. No. 223,614
Claims priority, application Italy, Feb. 5, 1971, 20194/71
Int. Cl. H03f *3/18*
U.S. Cl. 330—17 **19 Claims**



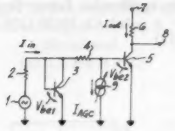
A power amplifier for low-frequency oscillations, realizable by integrated-circuit technique, comprises a number of cascaded transistors forming a high-impedance input stage, an intermediate or driver stage and a balanced power stage feeding a central output terminal 12. A control transistor T_2 constituting part of a composite input transistor T_1, T_2 has its collector grounded through a current-limiting transistor T_4 paired with an identical transistor T_5 producing an image current which duplicates the collector current of the control transistor T_2 and passes through a voltage divider composed of a pair of resistors R_6, R_7 each of the same magnitude as a feedback resistor R_8 inserted between the output terminal 12 and the emitter of transistor T_2. A controlled transistor T_3 at the entrance of the intermediate stage, of the same conductivity type (PNP) as the control transistor T_2 and susbtantially identical therewith, has its base connected to the collector of transistor T_2 and has its emitter energized through an ancillary transistor T_9 of opposite conductivity type whose base is tied to the junction of resistors R_8 and R_7. The emitters of transistors T_9 and T_3 are interconnected via a further resistor R_9 of the same magnitude; with the bases of twin transistors T_4 and T_5 jointly connected to a d-c supply terminal 1 through a biasing transistor T_{10} and a low resistance (e.g. diodes D′, D″) equaling the overall emitter/base resistance of composite transistor T_1, T_2, this arrangement stabilizes the means voltage of output terminal 12 at substantially half the voltage of the ungrounded supply terminal 4.

3,828,266
SIGNAL CONTROL CIRCUIT

Takashi Okada, Yamato; Yoshiaki Ogawara, Tokyo, and Masashi Takeda, Isehara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 28, 1973, Ser. No. 336,820
Claims priority, application Japan, Mar. 2, 1972, 47-21878; July 22, 1972, 47-73587; Aug. 14, 1972, 47-81264
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **11 Claims**

A signal control circuit which includes an amplifying transistor connected to an input circuit to receive an input signal. A constant reference bias voltage is produced across a diode connected to the input circuit and signals are connected from the input circuit to the transistor by a resistor. A controllable impedance is connected at a point between the resistor

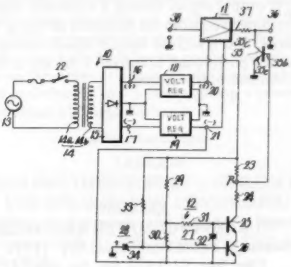


and the transistor so that by controlling the impedance the current gain of the amplifier is linearly controlled over a wide range.

3,828,267
MUTING CIRCUIT

Katsuaki Tsurushima, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 15, 1973, Ser. No. 360,460
Claims priority, application Japan, May 27, 1972, 47-62497
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **11 Claims**

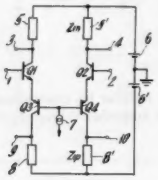


A voltage dividing circuit including first and second transistors connected in series is connected between a first output terminal of one polarity of a bridge rectifier circuit and a second output terminal of the opposite polarity of a voltage regulator connected to the bridge rectifier circuit. A first time constant circuit is connected between the base of a first one of the transistors and the first output terminal and a second time constant circuit is connected between the base electrode of the second transistor and the circuit ground. A muting transistor is connected in shunt with the signal transmission line and its base is connected between the first output terminal and the first transistor. When power is applied to the circuit by the closing of a power switch the first transistor is initially made non-conductive during a predetermined period by the operation of the first time constant circuit so that the base electrode of the muting transistor is supplied with a muting signal to make it conductive and thereby mute signals on the transmission line. When power to the circuit is interrupted, as by the opening of the power switch, the second transistor is made non-conductive by the second time constant circuit for a predetermined time so that power stored in the voltage regulating circuit is supplied to the base electrode of the muting transistor to thereby again mute signals on the transmission line.

3,828,268
DIFFERENTIAL AMPLIFIER HAVING INCREASED BANDWIDTH

Tomoyuki Nishio, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Sept. 6, 1972, Ser. No. 286,760
Claims priority, application Japan, Sept. 7, 1971, 46-68539
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 5 Claims

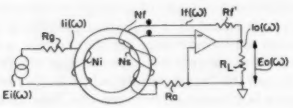


A differential amplifier is disclosed which includes a first pair of transistors of one conductivity type having impedance elements connected to their collectors. A second pair of transistors of an opposite conductivity type has emitters connected respectively to the emitters of the first pair of transistors and impedance elements connected to their collectors. A first output signal having a relatively high-frequency component is derived from the collector of one of the first pair of transistors, and a second output signal having a relatively low-frequency component is derived from the collector of one of the second pair of transistors.

3,828,269
CURRENT FOLLOWER AMPLIFIER

Ralph S. Norton, 4 Debra Pl., Syosset, N.Y. 11791

Filed Nov. 22, 1972, Ser. No. 308,747
Int. Cl. H03f 1/36
U.S. Cl. 330—97 12 Claims

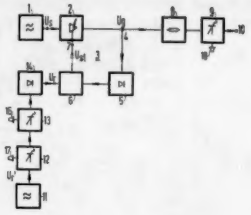


A linear broad band current follower amplifier in which the input and output impedances are isolated includes a magnetic core on which are wound inductively coupled input, sense and feedback windings. An input signal is applied to the input winding, the sense winding is connected to a quadrature amplifier circuit input, and the feedback winding is connected to the amplifier circuit output in a sense that the MMF produced by the feedback winding opposes the MMF produced by the input winding. The feedback winding is connected in series with a resistor across the amplifier input so that in addition to the MMF inverse feedback there is dc inverse feedback in the amplifier circuit.

3,828,270
CIRCUIT FOR ACCURATELY CONTROLLING THE AMPLITUDE OF A TRANSMITTER

Martin Ebisch, Hohenschaeftlarn, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 11, 1972, Ser. No. 288,046
Claims priority, application Germany, Sept. 17, 1971, 2146690
Int. Cl. H03g 3/22
U.S. Cl. 330—130 5 Claims

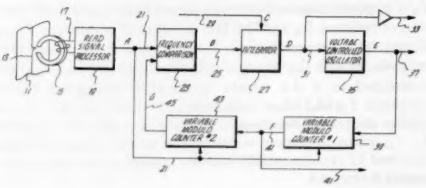


A circuit and system for controlling the amplitude of a transmitter wherein a variable gain amplifier receives the output of the transmitter and is controlled by a differential amplifier which receives inputs from a pair of rectifiers. One of the rectifiers receives a signal from the variable gain amplifier and the other rectifier receives an input from a low frequency oscillator whose output is supplied to the rectifier through a pair of variable attenuators which allow accurate adjustment of the input to the rectifier. One of the variable attenuators may change the amplitude of the signal in relatively large steps and the other variable attenuator accomplishes fine settings.

3,828,271
CLOCK AND SECTOR MARK GENERATOR FOR ROTATING STORAGE UNITS

Francis J. Schwanauer, Agoura, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 27, 1973, Ser. No. 383,162
Int. Cl. H03b 3/04; H03k 1/16
U.S. Cl. 331—1 A 10 Claims

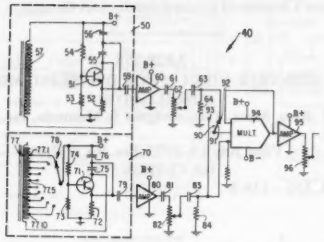


In a rotating storage unit such as a disk pack drive wherein encoded data is recorded on concentric tracks on the disk, the clock signal that times the data as it is recorded on a track or times the data as it is read from a track, along with sector indications, is accurately synthesized from the occurrence of a once-per-revolution signal (index signal) which is slaved to the rotational speed variations of the disk. This index signal may be recorded on the disk. The index signal synchronizes a voltage controlled oscillator to generate the clock pulses. These clock pulses are divided down by a variable modulo counter to produce sector indicating signals. These sector indicating signals are divided down to a once-per-revolution signal that is compared in time of occurrence to the index signal from the disk. The time difference between these two signals generates a control signal that regulates the voltage controlled oscillator.

3,828,272
TONE GENERATOR FOR SELECTIVE CALL TRANSMITTER

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr. 68850

Filed Nov. 15, 1972, Ser. No. 306,859
Int. Cl. H03b *21/00*
U.S. Cl. 331—40 5 Claims

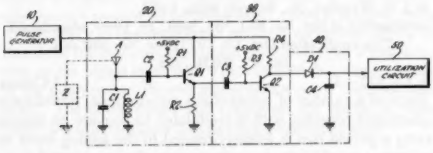


The tone generator includes a first oscillator to generate a first signal of a fixed frequency and a second oscillator which is variable to generate a second signal of a selected frequency. A multiplier receives the signals and provides a pair of tones having frequencies respectively equal to the sum of and difference between their frequencies. A switch may be provided so that both inputs to the multiplier are received from the variable frequency oscillator, in which case the output of the multiplier will be a single tone having a frequency twice that of the signal produced by the variable frequency oscillator. In either event, the tones are modulated on an RF wave.

3,828,273
CONDITION-RESPONSIVE CONTROL CIRCUIT INCLUDING PULSE-ENERGIZED OSCILLATOR AND AMPLIFIER

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed July 23, 1973, Ser. No. 381,573
Int. Cl. G08b *13/26*; H03b *5/12*
U.S. Cl. 331—65 12 Claims

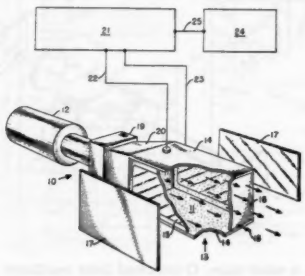


A pulse-energized, DC-biased oscillator/amplifier which responds to the coupling of an external impedance comprising either a substantial capacitive or resistive component to the tank circuit of the oscillator by attenuating the oscillations developed therein in response to each energizing pulse. The amplifier is pulse-energized contemporaneously with the oscillator, and its output is detected to develop a voltage for controlling a utilization circuit.

3,828,274
ELECTRON BEAM-PUMPED GAS LASER SYSTEM

Barton Krawetz, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation of Ser. No. 40,037, May 25, 1970. This application Nov. 5, 1971, Ser. No. 196,076The portion of the term of this patent subsequent to Feb. 8, 1999, has been disclaimed.
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 4 Claims

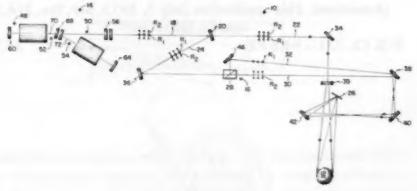


A high power electron beam-initiated electrical-discharge gas laser system including a gaseous lasing medium placed in an optical cavity contained in a vessel having two large electrodes electrically insulated from each other; and a charged particle acclerator directing an electron beam through the gaseous medium perpendicular or parallel to the optical path. The system is capable of producing pulses having a total energy content on the order of about 20,000 joules, with the energy released or delivered in 0.5 μsec., giving a power rating on the order of about 10^4 megawatts.

3,828,275
POLARIZED MULTIFREQUENCY LASER OSCILLATOR FOR HOLOGRAPHIC CONTOURING

Lee O. Heflinger, Torrance, and Ralph F. Wuerker, Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 30, 1972, Ser. No. 310,867
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 35 Claims



A multifrequency coherent light beam is generated containing two optical frequencies which may be polarized in different directions to permit separation of the two frequencies by a polarization beam splitter. The two frequencies may be generated simultaneously or consecutively. Contour holograms are recorded by splitting the polarized multifrequency coherent beam into a scene beam containing both optical frequencies and two separate reference beams each comprising one of the frequencies and directing each reference beam

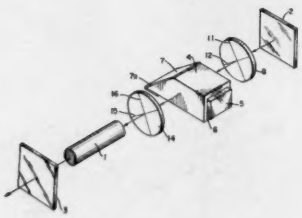
to the holographic recording medium at the optimum reference beam angle for the respective reference beam frequency.

3,828,276

HIGH EFFICIENCY ACOUSTO-OPTICAL Q-SWITCH

Martin G. Cohen, Huntington, N.Y., assignor to Quantronix Corporation, Smithtown, N.Y.

Filed May 25, 1973, Ser. No. 363,994
Int. Cl. H01s *3/11*
U.S. Cl. 331—94.5 Q **8 Claims**



In a solid state, Q-switched laser oscillator of the type in which the laser medium emits unpolarized light and the acousto-optical Q-switch exhibits strong optical polarization dependence, a first quarter-wave plate disposed within the optical cavity between the Q-switch and one cavity mirror for causing the polarization components of the light beam resolved along the fast and slow axes of the quarter-wave plate to rotate 90° between successive passages through the Q-switch so that the light which was less strongly scattered during one passage through the Q-switch is more strongly scattered during the next passage through the Q-switch, and a second quarter-wave plate disposed within the optical cavity on the other side of the Q-switch for nullifying the effect of the first quarter-wave plate when the Q-switch is turned off so as to leave the polarization components of the laser oscillation unperturbed.

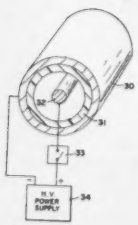
This invention relates to laser Q-switches, and, more particularly, to acousto-optical Q-switches for solid state laser media of the type which inherently produce unpolarized light.

3,828,277

INTEGRAL CAPACITOR LATERAL DISCHARGE LASER

William F. Otto, and Richard D. Milton, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 212,526, Dec. 27, 1971, abandoned. This application July 3, 1973, Ser. No. 376,261
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 PE **3 Claims**



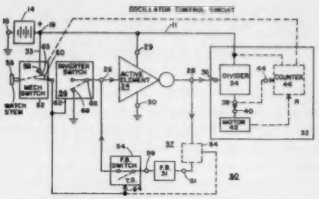
A high pressure gas laser is described in which uniform electrical field distribution is obtained for lateral discharge in the gas by employing a capacitor formed within the laser cavity. The laser may be a parallelepiped with capacitor plates forming two opposite rides of the parallelepiped. One of the plates is coated with a ceramic dielectric. Alternatively, the laser may be a conductive circular cylinder with a center electrode, and with a ceramic dielectric coating on the inside of the cylinder. A high voltage source is connected to the laser. Emission occurs when the capacitor charges to a high enough voltage to discharge through the gas. For better charge distribution, the coating may be covered by a resistive layer, or may have a mosaic of isolated conductors thereon.

3,828,278

CONTROL CIRCUIT FOR DISABLING MOS OSCILLATOR

Lynn T. Rees, Mesa, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed July 13, 1973, Ser. No. 379,045
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R **9 Claims**



The oscillator control mechanism renders the active element of an oscillator inoperative in response to the closure and operative in response to the opening of a mechanical or solid state control switch. In addition to the control switch, the mechanism includes solid state feedback and inverter switches which are controlled by signals conducted by the control switch. The inverter switch is rendered conductive and the feedback switch is rendered nonconductive to disable the oscillator. Alternatively, the inverter switch is rendered nonconductive and the feedback switch is rendered conductive to enable the oscillator. The mechanism requires no switches to be connected between the power terminals of the active element and the power supply so that the oscillator can be operated by a power supply voltage of small magnitude.

3,828,279

DATA HANDLING SYSTEM EMPLOYING TIME MODULATION

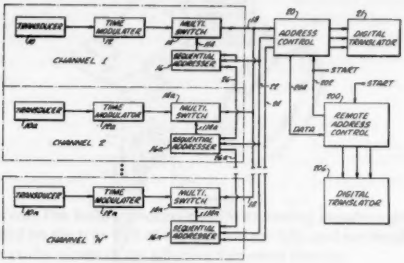
James P. Labarber, Santa Ana; Ross A. Shade, Newport Beach, and William H. Terbrack, Santa Ana, all of Calif., assignors to J. D. Wrather, Jr., Beverly Hills, Calif.

Continuation of Ser. No. 861,785, Sept. 29, 1969, abandoned. This application Oct. 13, 1972, Ser. No. 300,401
Int. Cl. H03k *7/06*
U.S. Cl. 332—2 **14 Claims**

Each of a number of substantially conventional transducers is packaged together with a modulator to provide an output having a period that is linearly related to the analog input or condition sensed by the transducer. A multiplexer switch is included in each package and a number of channels of combined transducer modulator and multiplexer switches are arranged to be addressed in a selected order for sequential readout as determined by operation of an address controller. The address controller receives data in sequence from the multiplexer switches of the several time modulators and generates a gate signal having a duration equal to the duration of a number of consecutive chronologically contiguous data periods from each one of the transducer-time modulator channels. The gate signal allows a number of fixed frequency, high

repetition rate clock pulses to be passed to a pulse counter and memory circuit which thus provides a digital representation and storage of the analog or condition inputs to the several transducers.

A unique time modulator comprising a modified, free-running multivibrator receiving an input through an impedance conversion circuit from the sensing transducer has each half cycle duration linearly related to such input. A power supply in common with the transducer is employed by the modulator in such a manner that fluctuations of the power supply cause variations in the transducer output that are compensated by concomitant variations of the modulator.



3,828,280

COMPRESSORS, EXPANDERS AND NOISE REDUCTION SYSTEMS

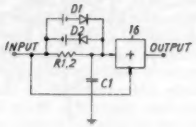
Ray Milton Dolby, London, England, assignor to Dolby Laboratories Inc., New York, N.Y.

Filed May 1, 1973, Ser. No. 356,126

Claims priority, application Great Britain, May 2, 1972, 20406/72

Int. Cl. H04b *1/64*

U.S. Cl. 333—14 **39 Claims**



The invention provides signal compressors, expanders and noise reduction systems. In the compressor, a linearly treated signal component has combined therewith in opposition a non-linearly treated signal component which is however linear with respect to dynamic range above a threshold. Below the threshold the non-linearly treated component has a gain which falls as the signal level falls. The expander is complementary to the compressor; the two signal components combine additively. The compressors and expanders are useful in video, audio and other circuits for effecting noise reduction.

3,828,281

IMPEDANCE SIMULATING CIRCUIT FOR TRANSMISSION LINES

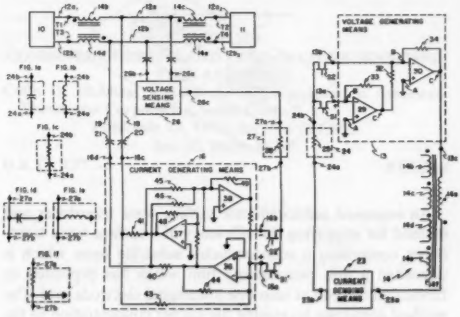
Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Feb. 26, 1973, Ser. No. 335,488

Int. Cl. H03h *11/00*

U.S. Cl. 333—17 **15 Claims**

A circuit for simulating the presence of positive or negative impedances in shunt or in series with a transmission line. A voltage generating circuit generates an impedance simulating voltage and introduces that voltage in series with the transmission line. A current generating circuit generates an impedance simulating current and introduces that current in shunt with the transmission line. Current feedback circuitry controls the voltage generating circuitry in accordance with the amplitude of the signal current in the transmission line to simulate either a positive or negative series impedance. Voltage feedback circuitry controls the current generating circuitry in accordance with the signal voltage across the transmission line to simulate either a positive or negative shunt impedance. Circuitry is also provided to afford these simulated impedances in the presence of echo suppressing and impedance matching characteristics.



3,828,282

VARIABLE WAVE-GUIDE IMPEDANCE FOR MEASUREMENT AND CALIBRATION OF AN ACTIVE MICROWAVE ELEMENT

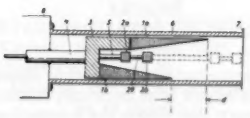
Gyorgy Geza Endersz, Alvsjo, Sweden, assignor to Telefonaktiebolaget L N Ericsson, Stockholm, Sweden

Filed Mar. 8, 1973, Ser. No. 339,143

Claims priority, application Sweden, Mar. 21, 1972, 3622/72

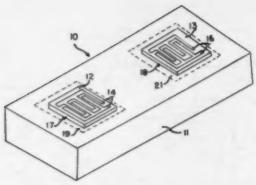
Int. Cl. H01p *1/26, 1/28;* **H03h** *7/38*

U.S. Cl. 333—22 R **9 Claims**



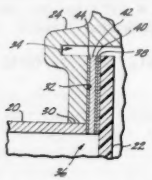
A variable waveguide impedance for the measurement of an active microwave element, for example in order to obtain a value of the figure of merit of the element, comprises a non-reflecting terminator consisting of two pyramidal parts mounted on a yoke which in turn is mounted on a first hollow shaft, and a short-circuit device consisting of two metallic cylinders mounted on a second shaft. The second shaft is displaceable and lockable in the first shaft and the whole impedance device is arranged in a waveguide section in relation to which the impedance can be displaced by means of the first shaft. The active microwave element is connected to the waveguide section in order to establish a microwave field in the same.

3,828,283
METHOD FOR IMPROVING SEMICONDUCTOR SURFACE WAVE TRANSDUCER EFFICIENCY
Michael R. Daniel, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 24, 1973, Ser. No. 382,265
U.S. Cl. 333—30 R **10 Claims**



An improved semiconductor surface wave transducer and method for improving the efficiency of a surface wave transducer comprising a semiconductor substrate upon which is deposited a thin piezoelectric film which has deposited or fabricated thereon at least one interdigital electrode grid. The method comprises increasing the carrier concentration of the semiconductor substrate to provide at least a plane of electrical conductivity underlying the piezoelectric film and electrode grid having a resistivity of less than 1.0 ohms-cm at 20°C.

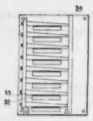
3,828,284
MICROWAVE DEVICE INCLUDING INDIUM-JOINED QUARTZ WINDOW CLOSING OFF HERMETIC CHAMBER
Thomas B. Hutchins, IV, 310 N.W. Brynwood, Portland, Oreg. 97229
Filed Mar. 1, 1973, Ser. No. 336,990
Int. Cl. H01p *1/08*
U.S. Cl. 333—98 P **3 Claims**

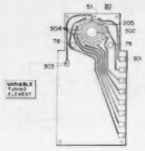


A microwave device including an hermetic chamber which is at least partially defined by an electrically conductive wave guide, and by a quartz glass window that is hermetically joined to the wave guide through a sealing medium including indium.

3,828,285
ELECTRONIC TUNER
Kanji Yokoyama, and Hiroshi Miwa, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 5, 1972, Ser. No. 312,288
Claims priority, application Japan, Dec. 6, 1971, 46-97871
Int. Cl. H03j *5/04*
U.S. Cl. 334—14 **4 Claims**

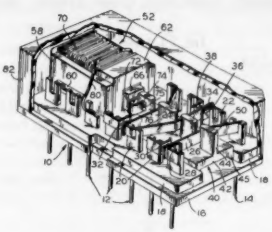
An electronic tuner in which a resonant frequency is changed by changing the voltage applied to a variable tuning element, and in which there is provided a base metal, on the face and back of which are attached a band change-over switch base plate and a resonant voltage change-over switch base plate respectively, these base plates are provided with a





rotary switch rotating on the base plates, and the rotary switch is rotated by means of a push button, an electro-magnet or motor.

3,828,286
MINIATURE RELAY
James B. Bain, Gresham, Oreg., assignor to Datron Systems, Inc., Parsippany, N.J.
Filed July 5, 1973, Ser. No. 376,739
Int. Cl. H01h *45/04*
U.S. Cl. 335—126 **16 Claims**

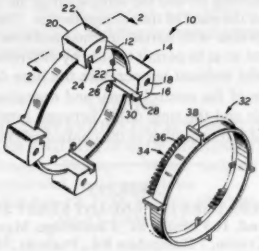


A miniature relay is formed upon a dual in-line plug adapted to be received by a mating integrating circuit socket. The plug comprises a flat plastic header provided with a pair of spaced parallel bosses between which an actuator slide is moved by a solenoid plunger. Multiple reed contacts extend across the header between rows of connecting pins, and through slots between upstanding posts forming a part of the actuator slide.

3,828,287
DEFLECTION YOKE MOUNTING MEANS
Charles E. Torsch, Geneva, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Nov. 23, 1973, Ser. No. 418,439
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **6 Claims**

An annular yoke retainer ring for integrally mounting a deflection yoke upon a cathode ray tube comprises a circumferential wall surrounding a yoke with the wall being provided with a plurality of hollow pockets having an interior wall formed with a groove for receiving positioning members extending from the yoke. The pockets are completely enclosed

on four sides and one end so that an adhesive dispensed thereinto cannot contaminate the yoke positioned interiorly



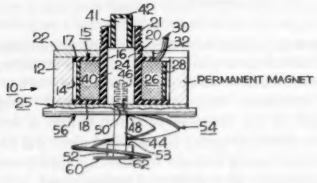
thereof. The hollow pockets receive extending members positioned on the rear wall of the cathode ray tube and are bonded thereto by means of the adhesive dispensed therein.

3,828,288

MAGNETIC ACTUATOR DEVICE

Donald R. Boyd, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 29, 1973, Ser. No. 365,025
Int. Cl. H01t *7/08*
U.S. Cl. 335—234 **15 Claims**



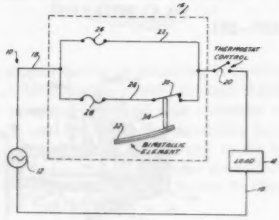
There is provided in accordance with an embodiment of the invention a magnetic actuator device comprising an annular-shaped permanent magnet having magnetic pole pieces in contact with the opposite axial ends of the permanent magnet. A bobbin member of a nonmagnetic electrically insulating material such as nylon is coaxially and concentrically positioned within the central opening of the annular permanent magnet. A trip coil connected to an electrical signal source is positioned on the hollow cylindrical hub of the bobbin. A cylindrical plunger or armature of magnetic material is positioned for axial linear sliding movement in the hollow hub of the bobbin. The forward end of the plunger carries a colored stud member which projects forwardly of the front pole piece and serves by its position as an indicator of whether the magnetic actuator device is in tripped or untripped condition. The rearwardly facing end of the magnetic plunger carries a nonmagnetic spindle which projects rearwardly through the rear pole piece and bears against a spiral spring mounted on the rear or outer surface of the rear pole piece. Normally, the magnetic actuator device is in a magnetically latched condition in which the rearwardly facing end of the plunger bears against the inner face of the rear pole piece, with the armature being held in this magnetically latched position against the force of the spring by the magnetic flux from the permanent magnet passing through the magnetic plunger. Upon the receipt of a momentary electrical signal pulse on the coil, a magnetomotive force with resulting magnetic flux is set up by the coil which opposes the magnetic flux of the permanent magnet to a sufficient extent to permit the spring to rapidly move the plunger to its forward or tripped position, thereby causing the signal indicator carried by the plunger to be projected forwardly to a position in which it indicates that the magnetic actuator device has been tripped. The linear movement of the plunger to tripped position upon the receipt of a trip signal on the coil may also be used to actuate a suitable switch, such as a microswitch, positioned contiguous the magnetic actuator device. The magnetic actuator device may be reset after tripping by manually pushing the plunger rearwardly against the spring force until it magnetically latches against the inner surface of the rear pole piece.

3,828,289

COMBINED CURRENT AND TEMPERATURE SENSITIVE FUSE ASSEMBLY

Colin D. Hickling, Woodstock, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.

Filed July 23, 1973, Ser. No. 381,893
Int. Cl. H01h *85/00*
U.S. Cl. 337—5 **8 Claims**



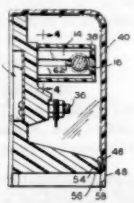
A combined current and temperature sensitive fuse assembly of a given current and temperature rating for installation between an electric source and an electric load comprises a pair of electrical paths in parallel, each electrical path having in series a fuse rated for half of the fuse assembly current rating and one of the electrical paths having a mechanical switch in series for interrupting the current flow through the one electrical path. Heat sensitive means, such as a bimetallic element, control the status of the switch in response to fluctuations in temperaure relative to the fuse assembly temperature rating, so that an excessive rise in temperature will cause the heat sensitive means to open the switch and thus cause the total current flow to pass through the other electrical path, thereby blowing its fuse. Upon subsequent lowering of the ambient temperature, the switch is closed so that the total current now flows through the one electrical path and blows its fuse, thus completely isolating the electric load from the electric source.

3,828,290

OVERVOLTAGE PROTECTOR HOLDER AND HOUSING

Chester J. Kawiecki, Santa Barbara, Calif., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

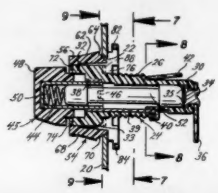
Filed Dec. 20, 1972, Ser. No. 316,737
Int. Cl. H01h *85/02*
U.S. Cl. 337—186 **13 Claims**



An overvoltage protection apparatus is described including an improved housing containing the overvoltage protection

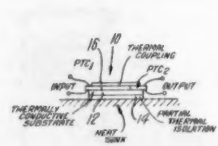
device and a separate holder member within which such device is secured. The housing includes a cover member and base member of a tapered shape so that the cover member is freed from such base member after it slides along a guide slot only about one-third the length of such base member. A concealed tamper-proof lock means is provided on the top portion of the cover and base member, including a notch and a cooperating lock projection which lock the cover in its closed position. The holder member is a hollow box of transparent plastic insulating material for holding the overvoltage protection device to enable it to be easily inserted into and removed out of engagement with electrical contacts on the base member while reducing the danger of electrical shock.

3,828,291
PROTECTOR FOR ELECTRIC CIRCUIT
Angelo Urani, St. Louis, Md., assignor to McGraw-Edison Company, Elgin, Ill.
Filed June 14, 1973, Ser. No. 370,148
Int. Cl. H01h *85/02*
U.S. Cl. 337—201 **19 Claims**



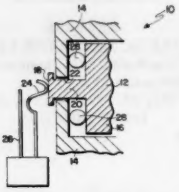
A mounting, for a front-mounted fuseholder, has a generally-annular body portion which permits the front portion of that front-mounted fuseholder to be telescoped rearwardly into it, and also has inwardly-extending lips that can be spread apart as that front portion is telescoped rearwardly into that generally-annular body portion but that subsequently move toward each other to hold that front portion within that generally-annular body portion. Thereafter, that mounting and that front-mounted fuseholder can be telescoped forwardly, from a point rearwardly of a panel, into position within an opening in that panel. That mounting has fingers that are bendable to permit that mounting to be moved forwardly into position within that opening but that subsequently prevent accidental movement of that mounting rearwardly of that panel.

3,828,292
TEMPERATURE COMPENSATING THERMAL RELAY
David H. Grossman, Mount Royal, Quebec, and Charles T. Plough, Beaconsfield, Quebec, both of Canada, assignors to Multi-State Devices Ltd., Dorval, Quebec, Canada
Filed Aug. 3, 1973, Ser. No. 385,239
Int. Cl. H01h *37/02*
U.S. Cl. 337—417 **7 Claims**



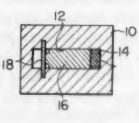
A temperature compensating thermal relay comprises an input heater element mounted on a heat storage device and adapted to be connected to a source of control signals, a temperature dependent output resistance element mounted on the same heat storage device as the heater element but which may be electrically isolated therefrom, and adapted to be connected in an electrical output circuit which is controlled by the control signal but with a predetermined delay with respect to both the turning on and the turning off of the control signal depending on the mass of the storage device. The heat storage device is provided with partial thermal isolation with respect to the ambient so as to permit to vary by different amounts depending on the ambient temperature the time delay between the tuning on of the control signal and operation of the controlled circuit and the time delay between turning off of the control signal and operation of the controlled circuit.

3,828,293
TEMPERATURE DEPENDANT START SWITCH
Edwin H. Land, 163 Brattle St., Cambridge, Mass. 02138, and David V. Cronin, 7 Hampshire Rd., Peabody, Mass. 01960
Division of Ser. No. 318,228, Dec. 26, 1972. This application Nov. 21, 1973, Ser. No. 418,060
Int. Cl. H01h
U.S. Cl. 337—417 **12 Claims**



An exposure actuation system, preferably including an electric start switch for a photographic camera including a movable actuator button which is operative to initiate a photographic exposure only at predetermined temperatures. Depression of the movable actuator button is operative to move one electrical spring contact into electrical engagement with another spring contact for closing appropriate camera shutter circuitry. In a preferred embodiment, a liquid-filled elastic member is interposed in the path of movement of the actuator button. Should the photographic camera be subjected to temperatures below the freezing point of the liquid, the liquid freezes and prevents depression of the actuator button.

3,828,294
ACCELERATION TRANSDUCER HAVING SEMICONDUCTIVE PIEZORESISTIVE ELEMENT
Kosaku Baba, Yokohama; Kiyoshi Wazawa, Tokyo, and Akio Hosaka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan
Filed Apr. 10, 1972, Ser. No. 242,429
Claims priority, application Japan, Aug. 2, 1971, 46-69025
Int. Cl. H01c *7/16*
U.S. Cl. 338—43 **4 Claims**



An acceleration transducer comprising a semiconductive plate having therein at least one piezoresistive element. The semiconductive plate is strained by a force exerted by a weight which is adapted to be movable according to an acceleration applied to the transducer. Due to the strain of the semiconductive plate, the element is varied in proportion to the

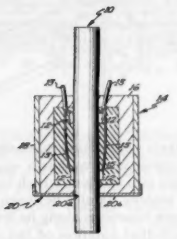
amount of strain thereof. The variation of the resistivity of the element is therefore proportional to the magnitude of the acceleration applied to the transducer and utilized as an acceleration signal. The acceleration transducer is simple and compact in construction and has improved temperature and frequency characteristics.

3,828,295

MOISTURE IMPERVIOUS IMPACT SHIELD FOR A TRANSDUCER AND METHOD OF MAKING THE SAME

Richard S. Bradley, Fairmont, Minn., assignor to Weigh-Tronix, Incorporated, Armstrong, Iowa

Filed July 12, 1973, Ser. No. 378,709
Int. Cl. G01b 7/16
U.S. Cl. 338—6 **5 Claims**



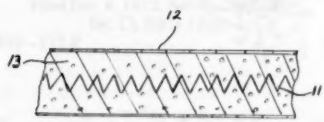
A moisture impervious impact shield is provided for a transducer including an elastically deformable bar having a plurality of electrical strain gauges mounted thereon for measuring the elastic deformation of the bar. The method employed in making the moisture impervious impact shield comprises forming and bonding an inner sleeve to and covering that portion of the bar to which the strain gauge is attached. This sleeve is formed of a foamed material, preferably silicone-rubber foam, which has a low bulk modulus, and therefore does not affect the transducer bar during elastic deformation thereof. An intermediate sleeve is then formed of a moisture impervious material, preferably silicone rubber and encases the inner sleeve. An outer metallic sleeve surrounds and is bonded to the intermediate sleeve and protects the electrical strain gauges against impact-type damage.

3,828,296

SHEATHED ELECTRIC HEATER ELEMENTS

Herbert Louis Eiselstein, and James Crombie Hosier, both of Hintungton, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 56,977, July 21, 1970, Pat. No. 3,729,308. This application Jan. 18, 1973, Ser. No. 324,656
Int. Cl. H01c 1/02
U.S. Cl. 338—234 **9 Claims**



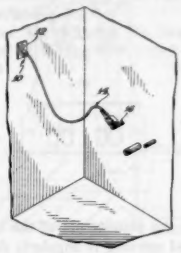
Sheathed electric heater elements wherein the sheathing is made of an alloy including specially proportioned amounts of nickel (about 15 percent to about 23 percent), chromium (about 17 percent to about 23 percent), silicon (about 0.3 percent to about 1.5 percent) and cerium (an effective amount up to about 0.05 percent) to assure high oxidation resistance and good corrosion resistance.

3,828,297

ELECTRICAL ADAPTER

Philip J. Hoza, III, 688 Cherry St., Winnetka, Ill. 60093

Filed Jan. 3, 1972, Ser. No. 215,056
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R **7 Claims**



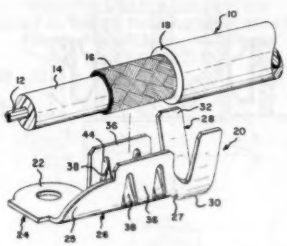
A grounding adapter having an insulating body member including a pair of male-female electric contact blades and a female ground receptacle. A lead wire connects with the ground receptacle and has a free end extending beyond the body member with an alligator clip secured to the free end. The body member has a peripheral groove around which the lead wire can be wrapped and retained therein by clipping the alligator clip to the body member.

3,828,298

ELECTRICAL TERMINAL FOR A BRAIDED SHIELD ON A COAXIAL CABLE

William Ludlow Schumacher, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 22, 1973, Ser. No. 325,705
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R **2 Claims**



The present invention discloses an electrical terminal for grounding the braided shield on a coaxial cable. The terminal has beveled, inwardly projecting lances on each sidewall of the ferrule forming portion which separates the strands of and slides behind the braided shield so as to lace the shield between the sidewalls and lances to provide mechanical support and electrical contact.

3,828,299

LAMP-RETAINING CONTACT

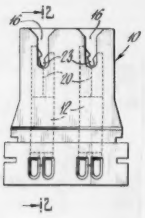
George E. Johnson, Bronxville, and Walter Newman, Forest Hills, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.

Filed Sept. 21, 1972, Ser. No. 290,989
Int. Cl. H01r 33/08
U.S. Cl. 339—53 **4 Claims**

A lampholder for a fluorescent lamp has spaced contacts for receiving and making electrical connections to the contact

pins of the lamp with a push-in movement of the lamp.

The contacts are mounted in a housing of insulating material and each contact is slit to form a set of spring fingers which resiliently engage with one of the contact pins of the lamp. The opposing edges of the spring fingers contain an enlarged



opening in which the contact pin of the lamp is seated and held. The enlarged opening is angularly disposed relative to the slit in the contact and is offset at one end to hold the contact pin between the spring fingers and prevent accidental displacement of the pin from engagement with the contact.

3,828,300

TERMINALS OF ELECTRICAL EQUIPMENT AND RIBBON-LIKE LEADS

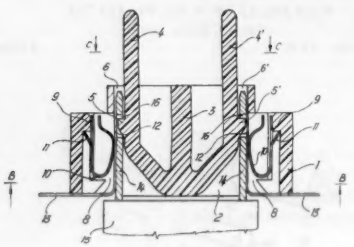
Giuseppe Codrino, Via Slazione Quattordio, Alessandria, Italy

Filed Mar. 8, 1973, Ser. No. 339,105

Claims priority, application Italy, July 14, 1972, 27012/72

Int. Cl. H01r *13/54*

U.S. Cl. 339—74 R **4 Claims**



A multi-way adapter, suitable for electrical connection between the segment terminals of the electrical equipment and flexible ribbon-like leads, wherein there is provided a box-shaped body of parallelepiped configuration, consisting of plastic material, having a median cavity and one or more side cavities, disposed parallel to said cavity, the latter showing in the central portion a partition wall parallel to the axis of the cavity itself and from the ends of which depart upwardly two flexible, parallel arms, provided with a step relief, being beveled on the lower part —7— and arranged at their outer face, said box-shaped body being further provided at the longitudinal walls of the median cavity and slots with recesses having an embossed reference portion and on which there are disposed spring elements, being shaped so as to exert a pressure in direction of the adjacent slots, said springs permitting the contact between the terminals of the ribbon-like leads and terminals of the electrical equipment, both inserted into the side slots and into those built on the sides of the two arms of the partition wall.

3,828,301

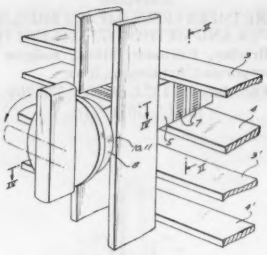
PLUG CONNECTOR FOR ELECTRICALLY INTERCONNECTING ORTHOGONAL CONDUCTORS

Rudolf Neidecker, Basel, Switzerland, assignor to Multi-Contact AG, Basel, Switzerland

Filed Feb. 26, 1973, Ser. No. 336,033

Int. Cl. A01r *13/54*

U.S. Cl. 339—75 M **13 Claims**



A plug for selectively connecting mutually orthogonal conductors forming a crossbar array has a square cross-section and is split axially into two sections which can be spread apart by a rotatable rod passing axially between the sections and formed at one or more locations along its length with non-circular formations such that rotation of the rod cams the two sections diagonally apart and into tight engagement with the inner walls of a passage formed by at least two orthogonal conductors of the cross bar array. The handle can only be rotated to spread the sections when the plug is pushed all the way into the hole.

3,828,302

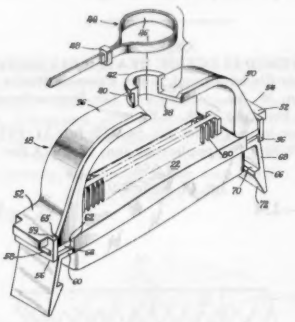
ELECTRICAL CONNECTOR AND MOUNTING MEANS

Edward A. Cieniawa, Hickory Hills, and Vincent J. Palecek, Cicero, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 13, 1972, Ser. No. 288,753

Int. Cl. E05c *13/58*

U.S. Cl. 339—91 R **14 Claims**



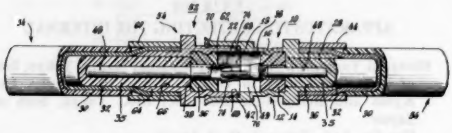
Electrical connector and mounting means therefor. The mounting means includes a container or "can" in which a first part of the connector is placed, and a shell or cable housing including the second part of the connector, the latter holding a cable the conductors of which are secured to the second part of the connector. The shell is an integral plastic piece and includes latching means and a strain relief collar for holding the

cable. The shell is fitted to the container in a simple direct, snap-on movement, in which the connector parts are mated, and the shell latched to the container.

3,828,303
COAXIAL CONNECTOR

Norbert J. Sladek, Fairfield; Pasquale Ralph Petti, Waterbury, and William Max Erich Zerlin, Newtown, all of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 28, 1972, Ser. No. 292,856
Int. Cl. H01r *17/12*
U.S. Cl. 339—177 R **7 Claims**

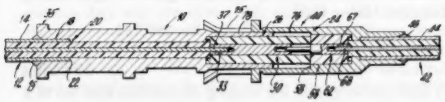


This invention relates to a simple, field installable, low cost, miniature, push-pull, quick connect/disconnect electrical connector system having a VSWR (voltage standing wave ratio) of less than 1.35 for all signal frequencies from 0.1 to 6 GHz useful for interconnecting coaxial cables having a characteristic impedance in the range of 50 ohms. The connector system is made up of a plug member and a jack member each comprising but three basic parts. The first part of each member is comprised of an integral tubular member of relatively soft electrically conductive material. The second part of each member is in turn comprised of a dielectric insert which is held in its respective tubular member by staking or rolling a reduced section of its tubular member's wall. The front portion of the jack member fits into the front portion of the plug member and through the action of an internal shoulder within the plug member a predetermined spacing between the dielectric inserts held by the plug and jack members is established when the members are fully mated. Each dielectric insert is in turn bored to receive one of two matable pin-like electrical contacts each of which comprises the third part of its respective connector member. Each contact has a hollow rear portion which may be crimped to the center conductor of a respective coaxial cable and thereafter inserted into the bore of its respective insert and retained therein. The outer conductor of each coaxial cable may be crimped around a reduced section of the rear portion of each connector by means of a crimping ferrule. The aforesaid fixed spacing between the dielectric inserts acts to produce a high impedance relative to the impedance afforded by the dielectric inserts to effect the afore-referenced VSWR of less than 1.35 for signal frequencies between 0.1 and 6 GHz.

3,828,304
SLIDE-ON RF CONNECTOR

Donald J. Winn, New Haven, Conn., assignor to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,687
Int. Cl. H01r *17/06*
U.S. Cl. 339—177 R **2 Claims**

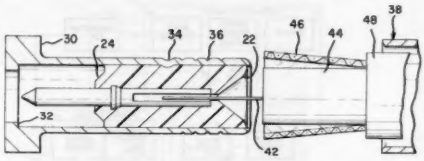


A slide-on connector including a plug and jack for electrically connecting the ends of two radio frequency coaxial cables to minimize radio frequency (RF) current leakage when fully butted and slightly unbutted.

3,828,305
TERMINAL CONNECTOR AND METHOD OF ATTACHING SAME TO COAXIAL CABLE

Richard Shure Hogendobler, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 30, 1973, Ser. No. 346,541
Int. Cl. H01r *17/04, 11/08*
U.S. Cl. 339—177 R **6 Claims**

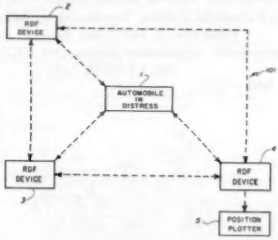


A coaxial cable terminal connector is disclosed along with a method of securing the terminal to the prepared end of a cable with a single crimping operation. The terminal includes a center contact one end of which is slotted and inserted into an axial bore of a dielectric member. The contact and member are placed in an inner ferrule member and positioned therein when the center contact of a stripped coaxial cable is inserted into the other end of the bore until a portion of the dielectric sleeve of the cable is also within the inner ferrule. An outer ferrule surrounds the inner furrule with the cable shielding therebetween. A single crimping operation both reduces the circular section of the terminal to secure the shielding between the ferrules and transmits sufficient force to encompassingly engage the center contact with the center conductor.

3,828,306
HIGHWAY DISTRESS SYSTEM

Paul Angeloni, P.O. Box 33, Poland, Maine 04104

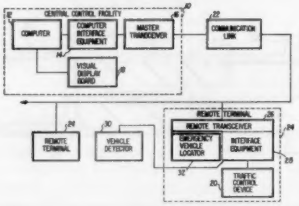
Filed Jan. 8, 1973, Ser. No. 321,818
Int. Cl. G08g *1/12*
U.S. Cl. 340—32 **3 Claims**



A system for noting the existence of a distress-condition of an automobile (or other vehicle) and for locating the automobile relative to monitoring stations. The system employs a transmitter in the vehicle in distress, which is adapted to send a multi-directional signal indicative of the nature of the trouble to a limited geographical area around the vehicle. A plurality of radio direction finder stations in said region position the vehicle in difficulty and the vehicle driver is notified of that fact and is given any other pertinent information. The portion of the system on the vehicle has both a transmitter and a receiver which are automatically rendered effective as al-

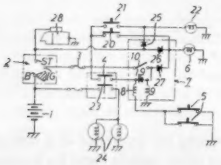
ternate conditions of system operation, thereby to send out distress information and to receive related information as alternate situations.

3,828,307
AUTOMATIC TRAFFIC CONTROL SYSTEM
Ernest Timmons Hungerford, Atlanta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.
Filed June 29, 1971, Ser. No. 157,871
Int. Cl. G08g *1/08*
U.S. Cl. 340—35 **33 Claims**



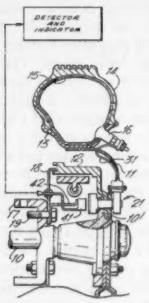
An automated control system is disclosed that is particularly adapted for use in regulating urban traffic flow. The system includes a central control facility linked with a plurality of remote terminals over a unitary communication channel, which is preferably equivalent to a voice grade, non-compensated telephone line. The central control facility includes a computer coupled through interface equipment with a master transceiver. The master transceiver couples the computer and interface equipment with the communication channel. Each of the remote terminals, which are coupled to the communication channel in parallel, party line fashion, includes a remote transceiver coupled through interface equipment to a traffic control device, such as a signal light. An emergency vehicle locator may also be included in each remote terminal. Vehicle detectors may be coupled to the communication channel through the remote terminals or through separate remote transceivers to provide a measure of traffic flow parameters.

3,828,308
OPERATION INDICATING DEVICE FOR HYDRAULIC BRAKE SYSTEM
Ikuya Kobayashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed May 3, 1972, Ser. No. 249,769
Claims priority, application Japan, Oct. 13, 1971, 46-80792
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 C **4 Claims**



An indicating device to alarm a vehicle driver of trouble with a hydraulic brake system of a vehicle. The indicating device comprises a closed-type pressure switch to be opened in response to line pressure of a certain value yielded within the hydraulic brake system, an open type brake switch to be closed in response to stepping on a brake pedal of the vehicle after the pressure switch is opened, a relay device including a first coil thereof energized by the closing of the brake switch with the pressure switch remaining extraordinarily closed, and a second coil thereof wound in an opposite direction against the first coil on an iron core on which the first coil is wound so as to operate a bi-stable contact device, and a pilot lamp, located on an instrument panel of the vehicle, being then connected to an electric current source through a key switch of the vehicle and the contact device when both of the pressure and brake switches are closed.

3,828,309
APPARATUS FOR DETECTING THE INTERNAL PRESSURE OF A TIRE
Hiroyuki Yamasaki, Kyoto, and Masaaki Kaida, Tokyo, both of Japan, assignors to Omron Tateisi, Electronics Co., Kyoto and Bridgestone Fire Co., Ltd., Tokyo, both of, Japan
Fire Co., Ltd., Tokyo, both of, Japan
Filed Dec. 20, 1972, Ser. No. 316,908
Claims priority, application Japan, Dec. 27, 1971, 46-105246
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **12 Claims**

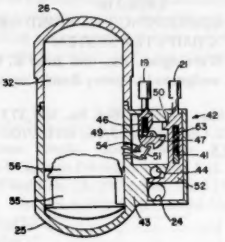


Apparatus for detecting the internal pressure of a tire, wherein a magnetic member is attached to a wheel of a vehicle for simultaneous rotation therewith and a coil is mounted on the chassis of the vehicle so that as the wheel rotates, the magnetic member passes by the coil for a voltage to be induced in the coil by electromagnetic induction. There is provided means operable in response to the tire pressure to change the position of the magnetic member relative to the coil, so that when an abnormal drop occurs in the tire pressure, the position of the magnetic member changes with a resulting change in the level or phase of the induced voltage.

3,828,310
BICYCLE THEFT ALARM
Albert J. Miller, Campbell, Calif., assignor to Bike Alarm, Ltd., San Mateo, Calif.
Filed June 5, 1972, Ser. No. 259,752
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 **29 Claims**

A theft alarm system for warning of unauthorized use of a bicycle or similar movable article employs a pendulum switch to sense movement of the article. The switch actuates a warning alarm, which continues for a brief period upon each sensed movement. The device clamps to the protected article, and a

padlock passed through an opening in the clamping member prevents loosening or removal of the device. A disarm switch



to deactivate the device includes a moving arm which must traverse the padlock opening, preventing disarming of the system unless the padlock is first removed.

3,828,311

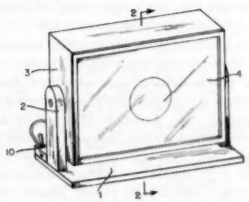
AMBIENT LIGHT WARNING DEVICE

Pai Ping Ching, 30 Hamilton Ave., Staten Island, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,037

Int. Cl. G08b *5/00*

U.S. Cl. 340—84 **2 Claims**



A device acting to warn persons, such as motor vehicle drivers, students and the like studying or reading, and persons under like conditions of insufficient ambient light, that the light is insufficient and should be increased.

3,828,312

DIGITAL DATA CHANGE DETECTOR

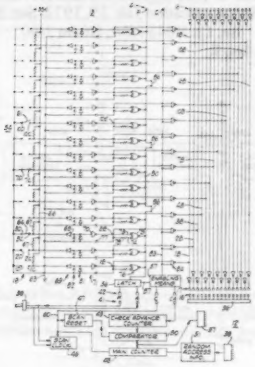
Robert Gordon Long, Scarborough, Ontario, Canada, assignor to D.D.I. Communications, Inc., Lewiston, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,443

Int. Cl. G06f *11/00*

U.S. Cl. 340—146.1 R **10 Claims**

A change detector is disclosed for use on digital data. Incoming data bits are either high or low and are applied to input terminals. From one input terminal the change is applied to a first input of an exclusive OR or NOR gate and this change is applied through a time delay circuit to a second input on that same gate. As a result, the exclusive alternative gate develops an output pulse in accordance with the time delay. A plurality of such input terminals and gates are utilized with the outputs of the gates all connected in parallel and developing an output pulse upon a change in any one of the incoming data signals to the input terminals. The foregoing abstract is merely a resume of one general application, is not a



complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,828,313

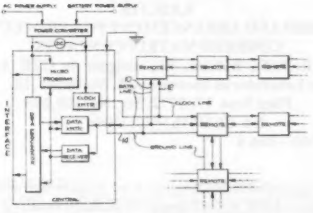
METHOD AND APPARATUS FOR DATA TRANSMISSION

Robert D. Schull, Mission Viejo, and Richard Y. Ichinose, Placentia, both of Calif., assignors to American Multiplex Systems, Inc., Anaheim, Calif.

Continuation-in-part of Ser. No. 182,688, Sept. 22, 1971, abandoned. This application Sept. 12, 1972, Ser. No. 288,414

Int. Cl. H04q *11/00*

U.S. Cl. 340—147 SY **18 Claims**

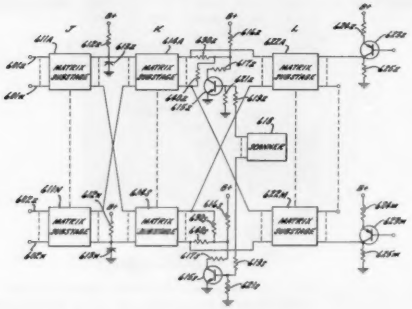


Method and apparatus for multiplex data transmission wherein binary address messages in a first waveform are transmitted from a central station through a data line to a plurality of remote terminals and binary response messages indicating the status of parameter points at the remote terminal are transmitted in a second waveform from the remote terminals through the same data line to the central station or other remote terminals. Remote receiver means are provided for differentiating between the two binary message waveforms. A clock signal is generated at the central station for transmission through a clock line to the remote terminals to provide synchronous circuit operation and a power supply for the remote terminals.

3,828,314
END MARK CONTROLLED SWITCHING SYSTEM AND MATRIX

Jack L. Bradbery, Evergreen Park; Todd G. Andersen, Lombard, and William A. Fechalos, Dupage, all of Ill., assignors to Wescom, Inc., Downers Grove, Ill.

Continuation-in-part of Ser. No. 112,346, Feb. 3, 1971, abandoned. This application Jan. 25, 1972, Ser. No. 220,651
Int. Cl. H04g *9/00;* **H04m** *3/00*
U.S. Cl. 340—166 R **52 Claims**

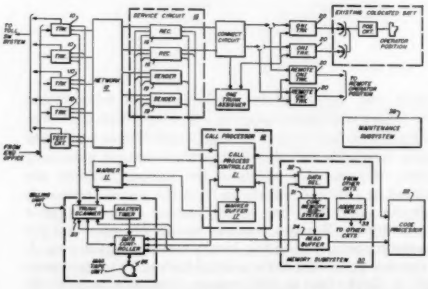


Electronic switching systems employing three terminal, four layer PNPN-type thyristors having their gates brought out from the layer or region adjacent their anodes and characterized by having holding current levels that are high relative to their starting or turn-on current levels (the names which have been coined to identify one such thyristor are "Trigger Point Adjustable Diode" and "TAD" are controlled by end marking and are suitable for direct switching of analog signals. Single and multiple stage switching matrices with end marking control, such as may be used in telephony, for example, employ TAD thyristors as crosspoints and include gate control circuitry, so as to provide each of several inlets with selective access to each of several outlets by means of self-seeking path control, while ensuring that no more than one path at a time is established to or from any given inlet or outlet. Such matrices are capable of being packaged in either discrete component or integrated circuit form.

3,828,315
METHOD AND ARRANGEMENT FOR PROTECTING CORREED MATRIX CONTACTS

Truman R. Mila, Batavia, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 17, 1973, Ser. No. 398,298
Int. Cl. H01h *9/30;* **H04q** *1/00*
U.S. Cl. 340—166 S **4 Claims**

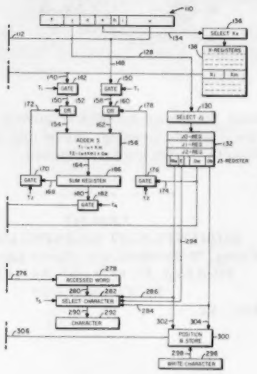


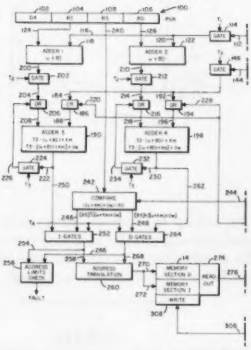
An arrangement and method for protecting the correed matrix contacts of a matrix, when connecting two sections of cabling together, including a near ground potential source which is coupled to the cabling at the beginning of disconnect before the connection is released, to discharge the inherent capacitance of the cabling.

3,828,316
CHARACTER ADDRESSING IN A WORD ORIENTED COMPUTER SYSTEM

Charles D. Card, Warrington, Pa., and John R. Crane, Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 30, 1973, Ser. No. 365,373
Int. Cl. G06f *13/00, 3/00;* **G11c** *7/00*
U.S. Cl. 340—172.5 **21 Claims**





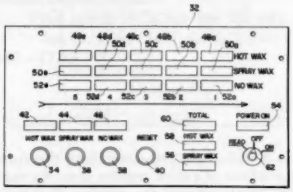
A character addressing system in a word-oriented computer system is described. A programmable system for selecting characters in a word-oriented computer system, wherein the size of each character can be selected, and the character positioned for character manipulation or computation is shown. The system provides for utilizing instructions in a program coded in a relative address format, and further provides for a separate bank or portion of memory for the storage of operands and the like having separate relative addressing relationships. As the addresses are called out in the operating program, the character addressing system operates first to compute in parallel a pair of alternative absolute addresses, and then operates to select the appropriate absolute address for accessing the memory. Once the computer word is accessed and read out of the memory, the appropriate character is selected from within the accessed word, and is justified to a

position adjacent the binary point. The system provides for selective sign extension when required. The character addressing system of this invention also positions characters that are to be written in memory to an appropriate position within the word-oriented format, and causes the positioned character to be written in the memory. The character addressing system also provides control circuitry for sequentially incrementing or decrementing successive characters whereby sequences of characters can be manipulated by the computer system.

3,828,317
CLEANING PROCESS SEQUENCE CONTROLLER

Klaus-Hermann Metle, Searborough, Ontario, Canada, assignor to Graphico Precision Works Ltd.

Filed Feb. 28, 1972, Ser. No. 229,864
Int. Cl. G05b *15/00;* **B67d** *5/06*
U.S. Cl. 340—172.5 **11 Claims**



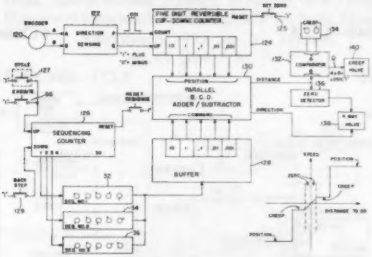
A process control programmer for use in the programming of selective process controls for selecting different processing options such as for example in car wash installations of the type equipped to both wash cars, and also apply a spray wax treatment or a hot wax treatment or the like and having a plurality of process selector signal generating means for generating a signal indicating the particular process selected, process selection information storage circuit means responsive to said signals for receiving and storing said information concerning the particular process selected, information signal transfer means for transferring said stored information from one said storage circuit means to another, and process operation signal means responsive to information stored in one said information storage circuit means to initiate operation of a selected process on a predetermined car.

3,828,318
OPERATOR PROGRAMMED NUMERICAL CONTROL SYSTEM

Charles D. Bennett, Alderwood Manor; Peter M. Coates, Kent, and Robert N. Coates, Bellevue, all of Wash., assignors to Cam Industries, Inc., Kent, Wash.

Filed Apr. 12, 1972, Ser. No. 243,242
Int. Cl. G06f *9/06;* **G05b** *19/42*
U.S. Cl. 340—172.5 **8 Claims**

A numerical control system specifically designed for programming by the machine tool operator and a simplified programming method therefor which allows the control to be completely programmed by the operator without resort to complex data bearing media or codes. The operator begins by examining some description of the required machining operations such as a part drawing to determine the desired positioning operations and the sequence of positioning steps. The coordinates of each step in the positioning sequence are determined relative to some predetermined reference point or "zero position". The digital information relating to each such step is programmed into the control by placing that information into data switches on each of a plurality of program panels. The control system is then activated to sequence operation by transferring the contents of the first of these control panels into the control and then carrying out the positioning operation specified in that particular panel. After the

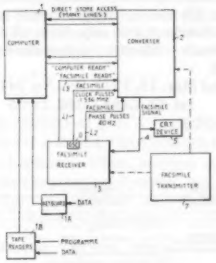


desired position is reached, a machining operation takes place and the control system sequences to the next program panel and carries out the next step in the positioning sequence.

3,828,319
COMPOSITION SYSTEM

David Gregory Owen; Alfred Henry Robinson, and Norman Whalley, all of London, England, assignors to IPC Service Limited, London, England

Continuation-in-part of Ser. No. 43,695, June 5, 1970, abandoned. This application Aug. 28, 1972, Ser. No. 284,095
Claims priority, application Great Britain, June 23, 1970, 31645/69
Int. Cl. G06f *3/00, 3/14*
U.S. Cl. 340—172.5 **20 Claims**



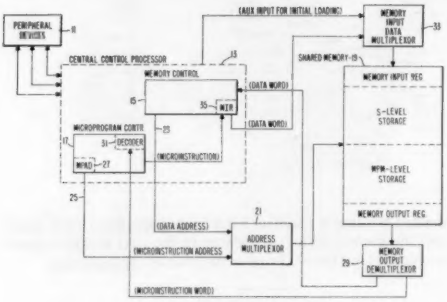
This invention relates to a system for the composition of typescript or other material from electronic signals generated in a computer. The signals are employed to operate a facsimile device to reproduce an image of the typescript or other material by means of linear scans. According to the invention, the output signals from the computer are fed through a converter which serves to convert the signals into a form suitable for reproduction of the typescript or other material by the facsimile device during its successive scanning lines as well as to compensate for the varying time duration of the different computer operations and the varying time duration of the data sensitive conversion process. The facsimile device may be a facsimile receiver adapted to support a photo sensitive carrier, such as a photographic film, on which the image is reproduced. Alternatively or additionally the facsimile device may be a cathode ray tube. Preferably the signals from the computer to the converter are in the form of run-length coding.

3,828,320

SHARED MEMORY ADDRESSOR

Bernard B. Dinerman, Norristown, and Franklin T. Schroeder, Exton, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 29, 1972, Ser. No. 319,533
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **4 Claims**



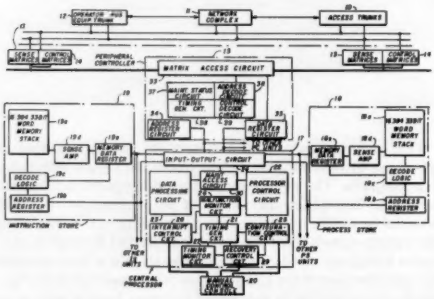
An access unit for a shared memory for use in a microprogrammable processor is provided utilizing a multiplexing scheme. Two functionally different inputs, one for data, the other for microinstructions are exclusively gated to memory in synchronization with microprogram control timing cycles to permit accessing the memory at separate times via a single channel.

3,828,321

SYSTEM FOR RECONFIGURING CENTRAL PROCESSOR AND INSTRUCTION STORAGE COMBINATIONS

John A. Wilber, Elk Grove Village; Verner K. Rice, Wheaton, and Rolfe E. Buhrke, La Grange Park, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 15, 1973, Ser. No. 341,428
Int. Cl. G06f *11/00, 13/00*
U.S. Cl. 340—172.5 **11 Claims**



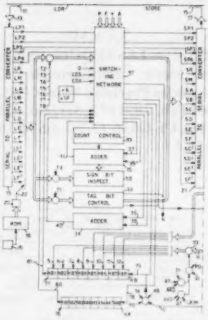
A system is disclosed including duplicate copies of central processors and storage means for switching active copies of central processor and primary copies of instruction through all combinations to find a working combination. The reconfiguration may be effected either through a fixed wired recovery control circuit which changes state in predetermined sequence or, alternatively, under program control.

3,828,322

ELECTRONIC COMPUTERS

Giovanni De Sandre, Brugherio; Angelo Subrizi, Ivrea, and Franco Bretti, Are Di Caluso, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Torino, Italy

Filed Apr. 24, 1972, Ser. No. 246,735
Int. Cl. G06f *7/06*
U.S. Cl. 340—172.5 **4 Claims**



Disclosed is a technique for controlling the format of a number to be read out of a store register in such a manner that symbols can be interlaced with the number. Two registers are used, one register containing the number and the other, the symbols. The two registers are read into a single register which then contains the appropriate symbol-number combination. Also disclosed are techniques for changing from floating point to fixed point notation and techniques whereby the number of digits which are used in calculations can be limited. Further, a device for reading magnetic cards by means of an improved entrainment technique is disclosed.

3,828,323

DATA RECORDING AND PRINTING APPARATUS

Richard E. Heitman, Acton; Genio R. Arciprete, Lexington; Peter G. Martin, Arlington; Richard C. Norris, Belmont, and Richard A. Brisk, Somerville, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed May 18, 1972, Ser. No. 254,727
Int. Cl. G11c *9/00, 21/00*
U.S. Cl. 340—172.5 **33 Claims**

A word processing system having an input/output electric typewriter, a magnetic tape recorder/player and a shift register buffer memory. A subsidiary memory in the form of a pair of series-connected single character registers are pro-

vided to form a feedback loop around the main shift register. Clocking and controls are provided for selectively connecting the output of the buffer to its input through the feedback loop, or to an input of the recorder/player, or to an input of the typewriter; and are provided for selectively connecting the input of the buffer to the output of the recorder/player, or to the output of the typewriter.

3,828,324

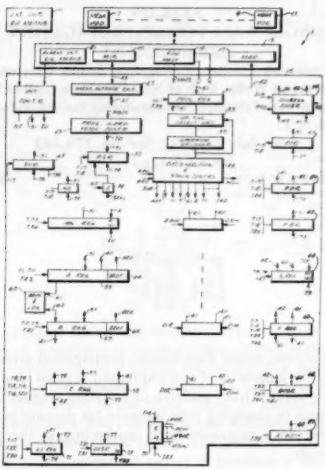
FAIL-SOFT INTERRUPT SYSTEM FOR A DATA PROCESSING SYSTEM

Jacob F. Vigil, Sierra Madre; Stephen L. Billard, San Gabriel; Joel T. Oropesa, Los Angeles, all of Calif., and Ralph W. Armstrong, Jr., West Chester, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 2, 1973, Ser. No. 320,081

Int. Cl. G06f *11/04*; **G08b** *29/00*

U.S. Cl. 340—172.5 **16 Claims**



A programmable data processing system includes a memory and a stack organized data processor which executes procedures stored in the memory and stacks records of execution of the various procedures into stack storage areas in the memory. Signalling means produce interrupt signals including interrupt signals indicating a system failure. The data processor is responsive to a plurality of time spaced-apart interrupt signals for recursively using a primary interrupt handling procedure. That is, each execution of the primary interrupt handling procedure is interruptable. The record of execution of the primary interrupt handling procedure is stacked into whichever stack area happens to be allocated to the interrupted procedure. In the event of particular types of system failures, each time the data processor attempts to use the primary interrupt handling procedure, an interrupt signal is produced and data processor again attempts to use the primary interrupt handling procedure. An up-down counter records the number of successful and unsuccessfully attempted recursive uses of the primary interrupt handling procedure. After the up-down counter reaches a predetermined count, the data processor terminates attempting to use the primary interrupt handling procedure and begins to execute a secondary interrupt handling procedure.

3,828,325

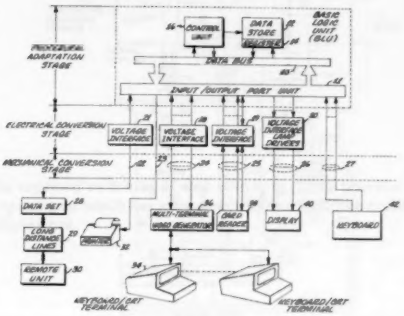
UNIVERSAL INTERFACE SYSTEM USING A CONTROLLER TO ADAPT TO ANY CONNECTING PERIPHERAL DEVICE

John P. Stafford; Allen B. J. Cuccio, both of Oklahoma City, Okla., and J. Arthur Johnson, Syracuse, N.Y., assignors to Honeywell Information Systems, Inc., Watham, Mass.

Filed Feb. 5, 1973, Ser. No. 329,491

Int. Cl. G06f *3/00, 3/14*

U.S. Cl. 340—172.5 **16 Claims**



A universal interface system includes a number of identical bidirectional input and output port leads, with groups of leads being identified under program control to drive each connecting peripheral device according to the devices' procedural interface requirements. Peripheral devices are serviced at the appropriate time to accept or send data information either serially by activating one port or in parallel by activating the number of port leads required to sample all data bits at one time. Each port is addressed separately and activated for transmitting or receiving data information signals from and to a common data bus. The ports are serviced according to a priority scheme for interrupting the basic controller. Any and all interrupts can be program masked by the controller.

3,828,326

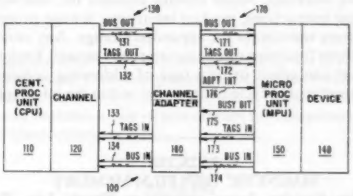
ADAPTER FOR INTERFACING A PROGRAMMABLE CONTROLLER TO A DATA PROCESSOR CHANNEL

Kenneth W. Cash, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1973, Ser. No. 352,376

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **9 Claims**



An adapter interfaces a computer channel to a single controller normally capable of both controlling a device and meeting the channel response requirements. The adapter detects times when the controller cannot communicate with the channel, inhibits this function of the controller, and itself carries out an altered channel communication procedure in simple logic circuits.

3,828,327

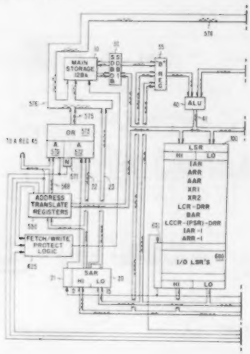
SIMPLIFIED STORAGE PROTECTION AND ADDRESS TRANSLATION UNDER SYSTEM MODE CONTROL IN A DATA PROCESSING SYSTEM

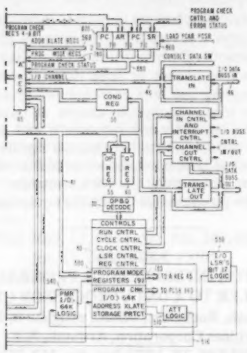
Neil C. Berglund; John W. Kerr, and Jerome U. Petrie, all of Rochester, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1973, Ser. No. 356,006

Int. Cl. G06f *9/18, 9/20*

U.S. Cl. 340—172.5 **22 Claims**





Improved mode control is provided for a computer system whereby system mode can change for each asynchronously occurring interrupt. Mode control includes the functions of privileged instructions, masked interrupts, storage protection and address translation for expanded storage. Any combination of these functions can be active at any instant. Each interrupt level can select its own type of addressing control and with respect to any cycle of operation within the interrupt routine.

3,828,328

MAGNETIC THIN FILM MEMORY

Kiyoo Ito, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

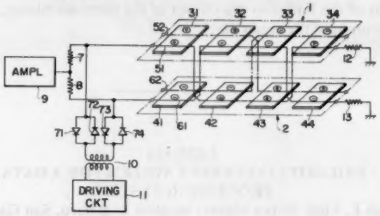
Filed Dec. 29, 1971, Ser. No. 213,250

Claims priority, application Japan, Dec. 29, 1970, 45-125961

Int. Cl. G11c *7/02*

U.S. Cl. 340—174 NC **8 Claims**

In the magnetic thin film memory of the one-cross-per-bit type, in which the mutually opposite pair of digit lines comprised in a pair of memory arrays each including a plurality of memory planes are connected commonly to a sense amplifier and, during writing of information digit currents with mutually reverse polarities are supplied to the pair of digit lines;



a magnetic thin film memory characterized in that part of the digit lines of one of said memory arrays is disposed to run by way of at least one memory plane of the other memory array.

3,828,329

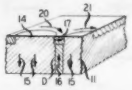
SINGLE WALL DOMAIN PROPAGATION ARRANGEMENT

Robert Frederick Fischer, Livingston; James Clayton North, and Raymond Wolfe, both of New Providence, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 24, 1972, Ser. No. 274,443

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **9 Claims**



A field access, single wall domain propagation arrangement is defined by a pattern of ion implanted regions in a domain supporting layer. Either positive or negative magnetostriction effects result in changing pole patterns for domain movement in response to a magnetic field reorienting in the plane of domain layer.

3,828,330

CYLINDRICAL DOMAIN PROGATION PATTERN

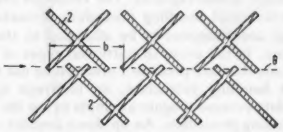
Franz Parzefall, Arget, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 19, 1973, Ser. No. 325,154

Claims priority, application Germany, Apr. 7, 1972, 2216864

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF **9 Claims**



A magnetic storage device of the so-called cylindrical domain type, employing a layer of magnetic garnet or magnetic orthoferrite, has a manipulation pattern composed of a

nickel-iron alloy applied thereto in a predeterined pattern to define paths along which the cylindrical domains may be shifted, under the influence of a magnetic field rotating in the plane of the layer. The pattern is formed of elongate rectangular elements, which are disposed at an angle of 45° relative the direction of the paths taken by the cylindrical domains, and the elongate pattern elements overlap or cross each other, in scissors fashion, allowing the use of a rotating magnetic field of higher frequency.

3,828,331

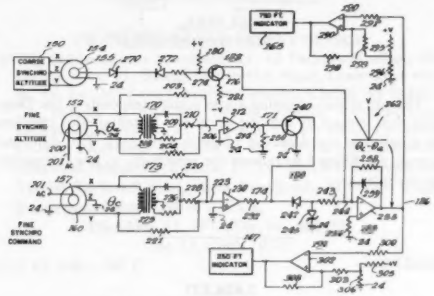
DEMODULATOR FOR ANGULARLY RELATED SIGNALS

Herman H. Brooks, Goleta, Calif., assignor to Sunstrand Data Control, Inc., Redmond, Wash.

Division of Ser. No. 858,486, Sept. 16, 1969, Pat. No. 3,639,850. This application July 20, 1971, Ser. No. 164,468

Int. Cl. G08c *19/38*

U.S. Cl. 340—179 **6 Claims**



A demodulator for signals angularly related to the position of a rotor of a synchro or resolver uses, in one embodiment, only one transformer in a circuit for subtracting, adding, and phase shifting the signals to produce a single signal phase shifted in proportion to the rotor angle. In another embodiment, a transformerless circuit uses an operational amplifier to derive the phase shifted signal. The phase shifted signal is compared with a reference signal to produce a rectangular wave with a variable duty cycle, which is integrated to produce a DC voltage representing the rotor angle. A pair of the circuits are used in an altitude warning system connected to synchros for the actual altitude and the command altitude of an aircraft. The derived phase shifted signals from both synchros are compared to produce a rectangular wave with a variable duty cycle, which is integrated and compared with voltages representing preselected altitudes to indicate when the aircraft is at those altitudes.

3,828,332

TEMPERATURE RESPONSIVE CIRCUIT HAVING A HIGH FREQUENCY OUTPUT SIGNAL

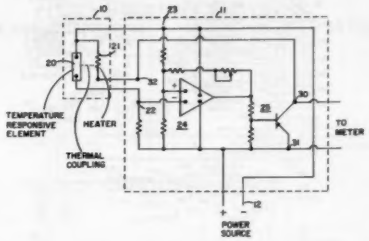
Andre Rekai, Scarborough, Ontario, Canada, assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 19, 1972, Ser. No. 263,805

Int. Cl. G08b *21/00*; **G05d** *23/00*

U.S. Cl. 340—227 R **2 Claims**

A temperature sensing switching circuit producing a high frequency output signal indicative of the ambient temperature of a temperature responsive resistance element, having a large change in resistance over a small change in temperature. The switching circuit controls a feedback heater for artifically heating the resistance element to produce the small change in temperature to reverse the operation of the switching circuit.



The repeated switching of said switching circuit provides an output signal which has a frequency indicative of the ambient temperature.

3,828,333

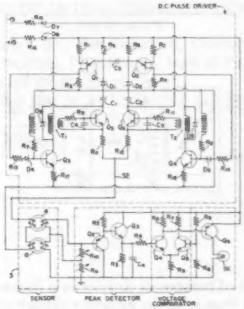
PRESSURE SENSING AND INDICATING SYSTEM

Paul M. Bryant, Aptos, Calif., assignor to International Technical Industries, Santa Cruz, Calif.

Filed Dec. 16, 1971, Ser. No. 208,650

Int. Cl. G08b *21/00*

U.S. Cl. 340—236 **3 Claims**



A pressure sensing and indicating system for use in conjunction with a vessel pressurized to an initial pressure with a fluid medium and operative to sense and signal the pressure within the vessel includes a pair of transducers for compensating for temperature variations.

3,828,334

SYSTEM FOR REMOTE MONITORING OF TOWER LIGHTING SYSTEM

Leonard M. Wallace, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

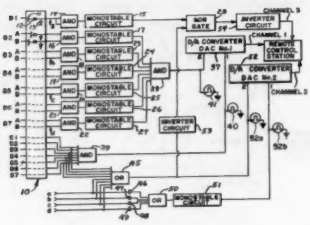
Filed Apr. 13, 1973, Ser. No. 351,097

Int. Cl. G08b *21/00*

U.S. Cl. 340—251 **9 Claims**

A tall tower equipped with a plurality of flashing beacon

lights and continuous obstruction lights is sensed at a remote location for indicating whether all lights are in proper working



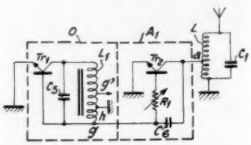
order, and if they are not, the system identifies the fault to the remotely located operator.

3,828,335

RADIO-WAVE DETECTOR FOR DISCOVERING THE MOVEMENT OF PERSONS OR OBJECTS IN A CONFINED SPACE

Gaston Raoul Salmet, 15 avenue des Arlantes, Saint-Maur, Val de Marne, France

Filed Mar. 15, 1973, Ser. No. 341,744
Claims priority, application France, Mar. 21, 1972, 72.9800
Int. Cl. G08b *13/26*
U.S. Cl. 340—258 C **11 Claims**



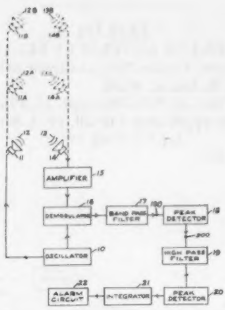
Movements of persons or articles in a monitored space are detected by a change in the effective capacitance between an antenna and an associated counterpoise defining that space, the antenna being energized by an oscillator whose tank circuit is tuned to a predetermined radio frequency *f''e*. The oscillator works into a tuned monitoring circuit resonant at a different frequency f_o, a capacitive feedback path extending from a tap on the inductive branch of that circuit to an input of the oscillator for applying thereto a control voltage which shifts its operating frequency from *f''e* to a value *fe* closer to f_o. This shift in oscillator voltage is reduced by a lowering of the control voltage through a further detuning of the monitoring circuit by a movement to be detected, with resulting change of the operating frequency to a value *f'e* between *f''e* and *fe* whereby the change in output voltage due to such detuning is intensified. A load circuit connected to the monitoring circuit includes a normally de-energized relay whose energization in response to the aforementioned voltage change produces a voltage drop across a supply resistor common to the relay and the oscillator whereby this voltage change is further stepped up.

3,828,336

INTRUSION ALARM SYSTEM WITH IMPROVED AIR TURBULENCE COMPENSATION

Donald P. Massa, Cohasset, Mass., assignor to Massa Corporation, Hingham, Mass.

Filed July 12, 1973, Ser. No. 378,562
Int. Cl. G08b *13/16*
U.S. Cl. 340—258 A **13 Claims**



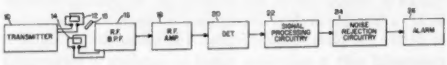
This ultrasonic intrusion alarm system responds to the Doppler shift caused by moving intruders. Instantaneous changes in amplitude are detected by peak detectors. The detected signals are filtered to reduce the sensitivity to low frequency air turbulence.

3,828,337

NOISE REJECTION CIRCUITRY

George Jay Lichtblau, 425 E. 63rd St., New York, N.Y. 10021

Filed Aug. 20, 1973, Ser. No. 389,728
Int. Cl. G08b *13/24*
U.S. Cl. 340—280 **14 Claims**



Noise rejection circuitry sutable for detection of a resonant tag in an electronic security system especially adapted for use in retail stores. True signals are distinguished from noise by sensing the absence of one or more pulses in an expected chain of pulses produced by the resonant tag. A parallel noise inhibit function is provided by a staircase generator and comparator which prevent an alarm indication in response to received fast pulse noise.

3,828,338

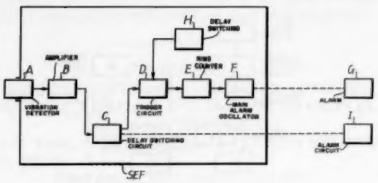
SAFE

Tomezo Kato, 172 Motoderakaji, Sendai, Japan

Continuation of Ser. No. 877,210, Dec. 22, 1969, abandoned.
This application Feb. 28, 1972, Ser. No. 229,926
Int. Cl. G08b *13/22*
U.S. Cl. 340—261 **3 Claims**

A safe having means for detecting a vibration caused by an intruder and producing a signal in response to the detected

vibration, electric circuit means operating in response to the vibration when it lasts for more than a certain period of time,



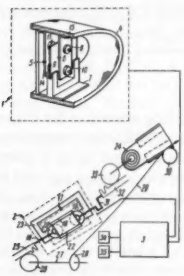
and means actuated by the electric circuit means to raise an alarm.

3,828,339

CRANE OVERLOAD SAFETY DEVICE

Savely Solomonovich Schedrovitsky, 13 Parkovaya ulitsa, 25, korpus 1, kv. 12; Dmitry Matveevich Mash, Leninskaya ulitsa, 14, kv. 34; Zoya Ivanovna Golovko, Chongrsky bulvar, 22, korpus 2, kv. 50; Leonid Fomich Goncharevich, Dmitrovskoe shosse, 145, korpus 3, kv. 36; Alexei Pavlovich Lebedev, Kursovoi pereulok 1, kv. 58; Jury Mikhailovich Dubrovin, Angarskaya ulitsa, 27, kv. 35, all of Moscow, and Nikolai Karlovich Suut, ulitsa Revoljutsii, 31, kv. 7, Topki Kemerovskoi oblasti, all of U.S.S.R.

Filed May 14, 1973, Ser. No. 360,026
Int. Cl. G08b *19/00*
U.S. Cl. 340—267 C **8 Claims**



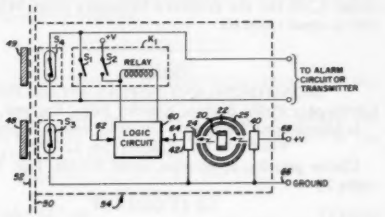
An overload safety device designed to variable-reach cranes is disclosed, said device comprising a load pick-up and a reach pick-up. The load pick-up has a means for sensing the load being hoisted and the reach pick-up has a means for sensing the reach or operating radius of the crane boom. Each pick-up also has a converter to change the mechanical movement of its respective sensing means into electrical signals. The converter of at least one pick-up has a screen mounted on the respective sensing means and also has primary and secondary coils which are wound on cores installed on one of said sensing means and are positioned so that there is a gap between them for the screen to freely move therein when load and reach changes take places. The primary coils are inserted in the circuit of a sine-wave generator. The secondary coils are wound differentially and connected to a detector.

3,828,340

INTRUSION ALARM ACTUATING APPARATUS

Richard H. Bauer, Jr., Los Altos; David A. Schuldt, Mountain View, and Edward K. Shum, Saratoga, all of Calif., assignors to D-TEK, Mountain View, Calif.

Filed June 15, 1973, Ser. No. 370,378
Int. Cl. G08b *13/08*
U.S. Cl. 340—276 **10 Claims**



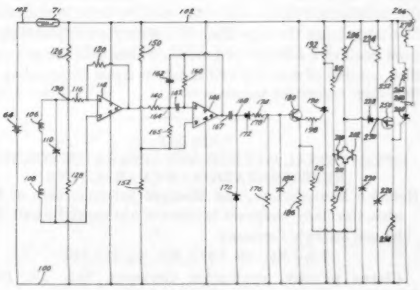
A sensing apparatus enclosed in a small attractive housing for attachment to standard door locking hardware or the like and including simple magnetic door closure sensing switches, a photosensitive locking mechanism detector and compact electronic logic circuitry combined in such a manner as to simultaneously detect the door closure and condition of the locking mechanism, and then actuate either an external hard-wired alarm circuit or the radio frequency transmitter of a wireless alarm system should the door be opened without first being unlocked in the normal manner. The alarm system is thus in effect armed and disarmed by the normal locking and unlocking of the door.

3,828,341

ALARM APPARATUS FOR FACILITATING THE DETECTION OF AN UNAUTHORIZED REMOVAL OF PROPERTY

Charles H. Carter, Jr., East Bradford, Chester County, and Stewart M. Newfeld, Philadelphia, both of Pa., assignors to ICI America Inc., Wilmington, Del.

Filed Jan. 20, 1972, Ser. No. 219,349
Int. Cl. G08b *21/00*
U.S. Cl. 340—280 **7 Claims**



An alarm packet of simulated paper currency contains alarm means and alarm-operating circuitry such that, when the packet is removed through an exit irradiated with a local field, the alarm means will thereby be automatically actuated to produce an alarm, as by the release of smoke, tear gas, or staining materials, or by producing alarm sounds, etc. Such a packet is placed with the currency given to a bank robber, and facilitates his apprehension and/or recovery of the loot. The electrical circuitry for actuating the alarm is constructed to prevent operation of the alarm until the packet has been taken

into the local field and removed therefrom, so that it will not operate if the robber lingers in the exit area within the field. Preferably the removal of the packet from the local field initiates a timing cycle for further delaying actuation of the alarm means, and provision is made so that if the packet is returned to the local field at the exit before the timing cycle is completed the alarm means will not be actuated and the timing cycle will be reset. The field is preferably an alternating magnetic near-field radiation having a frequency of less than about 3,200 Hz, the preferred frequency range being about 400 to about 1,600 Hz.

3,828,342

MONITORING AND DISPLAY APPARATUS

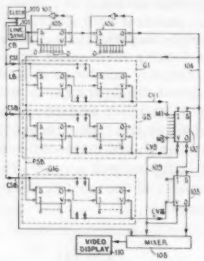
Christopher Philip Burton, Alderley Edge, England, assignor to International Computers Limited, London, England

Filed Feb. 17, 1972, Ser. No. 227,208

Claims priority, application Great Britain, Feb. 17, 1971, 4804/71

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **3 Claims**



Apparatus is described for displaying, on a display device having a number of spatially separated indicating positions such as a television monitor screen or a matrix of display lamps, the states of a number of elements, each elemental state being primarily indicated by signals applied over one of a number of indicating lines. The lines are connected to display converter modules which are arranged to scan the lines in sequence to produce a composite output signal which is applied to the display device. Where the number of lines is large, the serialisation of the line states may be done in stages, the first stage being the derivation of a separate composite signal from each of a number of groups of lines. The second stage then consists of deriving a final output signal by scanning the first-stage composite signals in turn.

3,828,343

OPERATIONAL METHOD AND APPARATUS FOR THE REPRESENTATION OF CHARACTERS

Heinrich Baumgartner, and Manfred Schultze, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

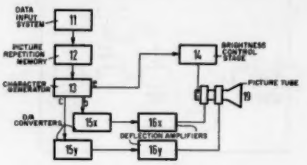
Filed Nov. 30, 1972, Ser. No. 310,764

Claims priority, application Germany, Feb. 29, 1972, 2209573

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **4 Claims**

A method and apparatus for the representation of characters which consist of character segments wherein data are fed-in in the form of data words by a character input system and a read only memory storing character segment data and a deflection unit are employed to cause deflection of a cathode ray, ink jet or the like of a character producing device in accordance with the character segment data, and wherein a bit is stored in a storage cell and its binary value depends on control data which are stored in the read only memory. Address words are supplied to the read only memory which are formed partially of the words of the character input system and partially of the bit stored in the storage cell. Among the characters which must be represented in a timely succession, those will be represented whose address words are formed of words of the character input system and of the first value of the stored



bit. With one of the address words, the control data are read from the read only memory and cause a second value of the bit. Those characters which have to be represented in a timely succession will be illustrated whose address words are formed of bits obtained from the character input system and of the second value of the stored bit.

3,828,344

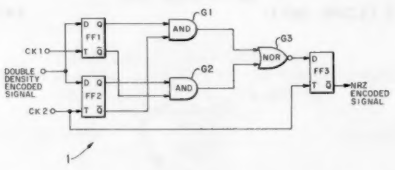
DOUBLE DENSITY TO NRZ CODE CONVERTER

William F. Schwartz, Marlton, and Robert W. Butler, Cherry Hill, both of N.J., assignors to GTE Information Systems, Incorporated, Moorestown, N.J., by said Schwartz

Filed Jan. 2, 1973, Ser. No. 320,454

Int. Cl. H03k *13/24*

U.S. Cl. 340—347 DD **6 Claims**



A data converting apparatus for converting double density encoded signals to NRZ (non-return-to-zero) encoded signals. A double density encoded signal is gated into a first flip-flop by a first train of clock pulses and also into a second flip-flop by a second train of clock pulses phase displaced with respect to the first train of clock pulses. For each transition in the double density encoded signal from a first level to a second level, for example, from a low level to a high level, a first AND gate coupled to the two flip-flops produces an output pulse. For each transition in the double density encoded signal from the second level to the first level, that is, from the high level to the low level, a second AND gate coupled to the two flip-flops produces an output pulse. The output pulses produced by the two AND gates are inverted and combined by a NOR gate into a single pulse train and applied to a third flip-flop together with the second train of clock pulses. The pulse train applied by the NOR gate to the third flip-flop is delayed by a slight amount with respect to the second train of clock pulses due to propagation delays inherent in the data converting apparatus due to the presence of the first and second flip-flops, the AND gates, and the NOR gate.

The third flip-flop operates to sample the levels of the single pulse train received from the NOR gate at the times of occurrence of the leading edges of successive clock pulses in the second train of clock pulses. Each time that the pulse train received from the NOR gate is low at the time of occurrence of the leading edge of a clock pulse in the second train of clock pulses, the third flip-flop assumes a first state, for exam-

ple a "1" state. Each time that the pulse train received from the NOR gate is high at the time of occurrence of the leading edge of a clock pulse in the second train of clock pulses, the third flip-flop assumes a second state, for example, a "0" state. The switching of the third flip-flop between its two states is determined by the levels of the pulse train received from the NOR gate at the times of occurrence of the leading edges of successive clock pulses in the second train of clock pulses.

3,828,345

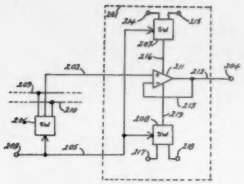
AMPLIFIER BUFFERED RESISTANCE NETWORK DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTER SYSTEM

Tenny D. Lode, 3270 Cherryridge Rd., Cherry Hills Village, Colo. 80110

Filed Jan. 4, 1973, Ser. No. 320,933

Int. Cl. H03k *13/04*

U.S. Cl. 340—347 DA **6 Claims**



Voltage follower amplifiers are used between the voltage switches and the resistor network of an otherwise conventional parallel resistor network digital to analog converter. A principal advantage is that errors due to the internal resistances of the electronic voltage switches are greatly reduced.

3,828,346

PCM TRANSMISSION SYSTEM

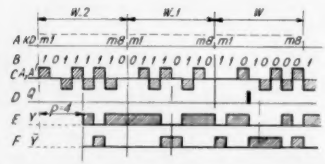
Daniel Emile Forster, Suresnes, and Jean Perrault, Loubeciennes, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 341,221

Claims priority, application France, May 30, 1972, 72.19338

Int. Cl. H04l *15/00*; **G06f** *5/00*

U.S. Cl. 340—347 DD **20 Claims**



This relates to a PCM transmission system employing alternate polarity (bipolar) transmission having a reduction of disparity. This is accomplished by employing the techniques of U.S. Pat. No. 3,300,774 and copending application Ser. No. 252,112, filed May 10, 1972, now U.S. Pat. No. 3,783,383, issued Jan. 1, 1974. In U.S. Pat. No. 3,300,774 the disparity is reduced by complementing a normal bipolar PCM word if the number of binary 1 bits in a word are less than n/2, where n is equal to the number of bits per PCM word. An extra bit is added to the complemented word to indicate to the receiver that the word has been complemented. This extra digit reduced the amount of information bits, or required an increase in transmission rate to maintain the same amount of information bits. This disadvantage was overcome by the above cited copending application by providing two adjacent pulses of the same polarity to indicate a complemented PCM word which is a violation of the alternate polarity rule as found in bipolar PCM. This latter arrangement has the disadvantage that a D.C. component greater than zero is introduced. The present invention overcomes this disadvantage by providing adjacent polarity violations with opposite polarity, for instance, one polarity violation is positive and the next adjacent polarity violation is negative.

3,828,347

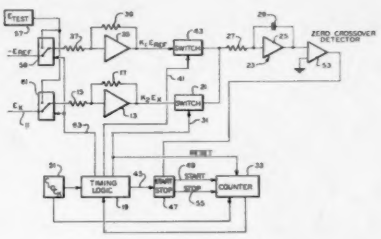
ERROR CORRECTION FOR AN INTEGRATING ANALOG TO DIGITAL CONVERTER

Sidney M. Sacks, Monsey; Arnold J. Brand, Parsippany, and William R. Slump, Glen Rock, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed May 24, 1973, Ser. No. 358,171

Int. Cl. H03k *13/00*

U.S. Cl. 340—347 AD **7 Claims**



An error correction circuit for use in an integrating analog to digital converter in which a test conversion is first made to establish a time period proportional to the error, which time period is then used as the fixed integrating time in a subsequent actual conversion.

3,828,348

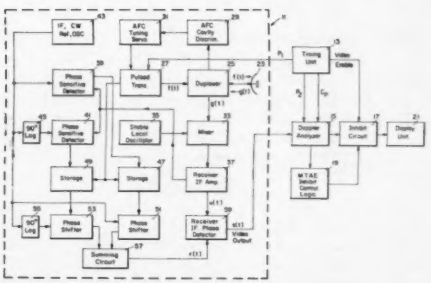
SYSTEM FOR MINIMIZING MULTIPLE TIME AROUND ECHOS IN A COHERENT-ON-RECEIVE-DOPPLER RADAR

John S. Murray, Jr., Berkeley, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 21, 1971, Ser. No. 191,537

Int. Cl. G01s *9/42*

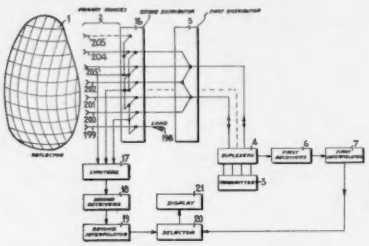
U.S. Cl. 343—7 A **11 Claims**



Target returns at the output of the doppler filters of the coherent-on-receive-doppler radar receiver are selectively applied to first and second pluralities of comparators. Those tar-

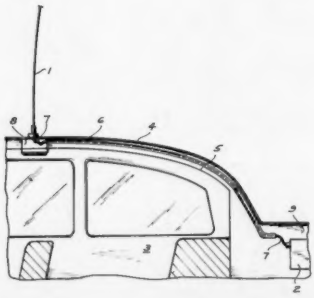
get returns above a first predetermined threshold level are applied through the first plurality of comparators to an inhibit circuit. Those target returns above a second predetermined threshold level are selectively applied from the second plurality of comparators to a plurality of gate circuits which in turn drive a control circuit to disable the inhibit circuit when a multiple time around target return is sensed and to enable the inhibit circuit to pass coherent moving target returns to a display unit when no multiple time around target return is sensed.

3,828,349
STACKED BEAM RADAR
Bernard Laurenceau, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Nov. 17, 1972, Ser. No. 307,555
Claims priority, application France, Dec. 1, 1971, 71.43096
Int. Cl. G01s 9/04
U.S. Cl. 343—12 SB **17 Claims**



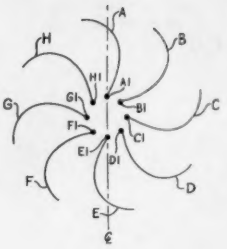
A stacked-beam radar comprising a vertical array of fixed horn antennas includes a distributor which produces a group of overlapping radiation patterns in the elevational plane. The emitted waves being plane-polarized, the targets encountered by the outgoing beams normally reflect energy which contains cross-polarized components. In order to retrieve the energy of these latter components each horn antenna works into a set of waveguide-type couplers which separate the two modes of polarization to provide a supplementary group of overlapping radiation patterns interspersed with those of the first group.

3,828,350
AUTOMOBILE ANTENNA INSTALLATION
William G. Kastner, St. James, Mo., assignor to The Raymond Lee Organization, New York, N.Y., a part interest
Filed Mar. 27, 1973, Ser. No. 345,261
Int. Cl. H01q 1/32
U.S. Cl. 343—715 **2 Claims**



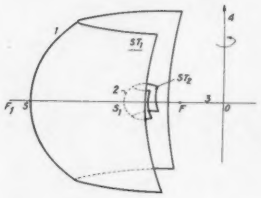
An antenna installation for coupling an antenna to radio equipment in a vehicle comprises electrically conductive metal tubing affixed to the roof between the roof and the head liner of the vehicle, extending between the antenna and the radio equipment and adapted to accommodate an electrical conductor therein.

3,828,351
BROADBAND SPIRAL ANTENNA
George N. Voronoff, San Francisco, Calif., assignor to Textron Inc., Belmont, Calif.
Filed July 23, 1973, Ser. No. 381,707
Int. Cl. H01q 1/36
U.S. Cl. 343—740 **3 Claims**



A frequency independent spiral antenna having a plurality of pairs of arms energized with currents equal to the sine of the respective terminal position angles of the arms for substantially removing bandwidth limitations.

3,828,352
ANTENNA SYSTEM EMPLOYING TOROIDAL REFLECTORS
Serge Drabowitch, and Bernard Daveau, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Aug. 3, 1972, Ser. No. 277,670
Claims priority, application France, Aug. 9, 1971, 71.29057
Int. Cl. H01q 19/10
U.S. Cl. 343—837 **3 Claims**



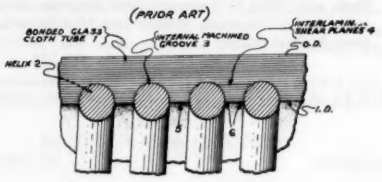
A microwave antenna consists of two toroidal reflectors turning their concave sides toward a common axis of rotation, i.e., a main reflector farther from that axis and an ancillary reflector closer thereto. The main reflector has a parabolic generatrix with a focal point situated on a point between the axis and the vertex of the ancillary reflector in a common equatorial plane of the two reflectors; the ancillary reflector has a hyperbolic generatrix whose foci substantially coincide with the focal point and with the vertex of the parabolic generatrix.

3,828,353

INTEGRALLY-WOUND ANTENNA HELIX-COILFORM

Charles P. Majkrzak, Nutley, and Michael S. Polgar, Oceanport, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 5, 1973, Ser. No. 329,776
Int. Cl. H01q 1/36
U.S. Cl. 343—873 3 Claims



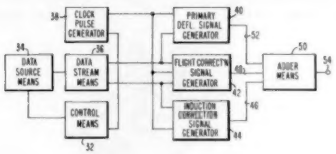
This concerns the fabrication of an integrally-wound helix-coilform assembly for an antenna of, for example, the high voltage and high power tunable helix-cylinder (inductance/capacitance) monopole type. Preassembled on a collapsible, cylindrically-shaped mandrel are a wound helix of controlled pitch, an end coupling to which the helix is affixed at one end, and a binding post securing the other end of the helix wire. After the entire assembly is enclosed in a plastic covering such as teflon shrink tubing or adhesive-backed tape helically wound to a predetermined tension and pattern, cycloaliphatic epoxy resin-saturated glass fibers are wound in a carefully controlled manner over the entire assembly in a predetermined pattern and then cured. The tensioned plastic covering together with the controlled winding of glass fibers provides for the interlaminar shear faces of the coilform structure type to be formed as convolutions between the helix turns, thus giving rise to an integrally-constructed assembly far superior both structurally and electrically.

3,828,354

INK DROP CHARGE COMPENSATION METHOD AND APPARATUS FOR INK DROP PRINTER

Howard T. Hilton, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,330
Int. Cl. G01d 18/00
U.S. Cl. 346—1 9 Claims



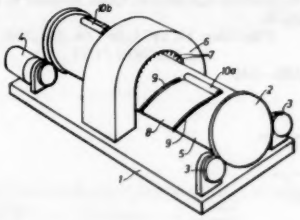
An ink drop printer for correcting drop-to-drop interactions by controlling the charge applied to a drop being formed based on the position to which the drop is to be deflected on the print medium, the charge placed on a selected number of previously formed drops and the charge to be placed on a selected number of drops to be formed.

3,828,355

CONTINUOUS INK-JET RECORDING

Richard Wick, Munich; Rudolf Meyer, and Klaus Hoffmann, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 18, 1973, Ser. No. 398,334
Claims priority, application Germany, Sept. 23, 1972, 2246797
Int. Cl. G01d 15/18, 15/28
U.S. Cl. 346—75 20 Claims



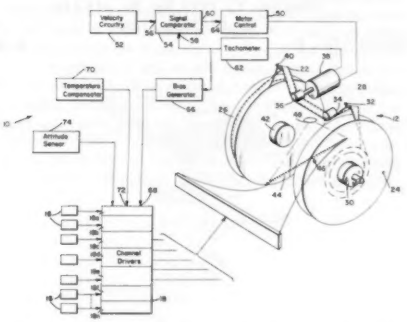
The ink-jet recording system comprises a rotor on whose cylindrical surface rests a recording support, and a annular ink-jet nozzle system which is stationary in relation to the rotor. At least one supply roll and one take-up roll for the sheet-form recording support are arranged on the rotor. These rolls are connected to the rotor so that the recording support makes both a rotary and a translatory movement in operation relative to the stationary nozzle system. In a preferred embodiment the rotor in the form of a solid cylinder and the recording support is guided externally over the surface of the rotor. In this embodiment, the stationary annular nozzle system is arranged over the surface of the rotor.

3,828,356

PLURAL CHANNEL RECORDER

William C. Wiers, Ann Arbor, Mich., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Dec. 27, 1971, Ser. No. 211,887
Int. Cl. G01d 9/38
U.S. Cl. 346—108 7 Claims



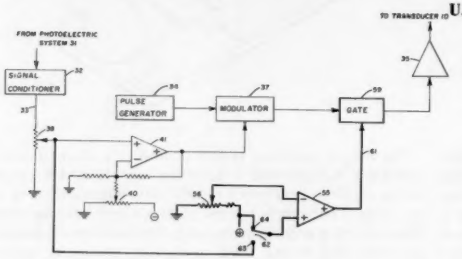
A nondestructive testing system is disclosed which is adapted to scan a workpiece and generate large quantities of data relating to the characteristics of the workpiece. In addition, a recorder is disclosed for accumulating and storing the large quantities of data generated by the nondestructive testing system. The recorder utilizes a continuously moving photographic film and a plurality of light-emitting diodes for exposing a plurality of channels or tracks of data on the film. A cross-correlator is also disclosed for optically comparing or

correlating the data recorded on the film with preselected references or standards. The cross-correlator includes an optical system which optically performs a spatial Fourier transform of the recorded data, compares or correlates the spatial Fourier transform with a corresponding spatial Fourier transform of the reference or standard and then performs an inverse spatial transform of the results of the comparison.

3,828,357
PULSED DROPLET EJECTING SYSTEM

William E. Koeblitz, Lyndburst, Ohio, assignor to Gould Inc., Chicago, Ill.

Filed Mar. 14, 1973, Ser. No. 341,208
Int. Cl. G01d *15/18*
U.S. Cl. 346—140 **4 Claims**

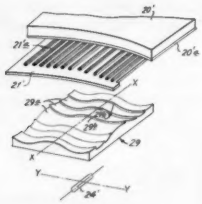


A facsimile system is described which employs a pulsed ink droplet ejecting system as the record marking means. In such a system, undesired droplets are sometimes deposited on record areas that should receive no ink. The cause of this irregularity is explained and circuit modifications are described which eliminate the undesired marking.

3,828,358
EXPOSURE APPARATUS FOR THE DIRECT PHOTOGRAPHIC PRODUCTION OF A PHOSPHOR SCREEN ON THE FACE-PLATE OF A COLOR PICTURE TUBE

Senri Miyaoka, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1973, Ser. No. 415,219
Int. Cl. G03b *27/00*
U.S. Cl. 354—1 **8 Claims**



In an exposure apparatus or lighthouse for use in the direct photographic production of a phosphor screen on the face-plate of a color picture tube or kinescope of the type having a mask with apertures therein associated with the phosphor screen, and in which the face-plate and mask are held in predetermined relation to each other during the selective exposure through apertures of the mask of a photosensitive layer on the face-plate by means of light rays passing through a correcting lens from a light source; such light source is linear so that light rays from locations along the light source reach each selectively exposed portion of the photosensitive layer, and the correcting lens, whose effective surface consists of a plurality of refractive surface sections having discontinuous borderlines, is arranged with such discontinuous borderlines extending at angles to the direction of the linear light source for avoiding the casting of shadows on the photosensitive layer by the discontinuous borderlines.

3,828,359
TEMPLATE FOR A GRAPHIC FORMING DEVICE

Peter J. Vogelgesang, Roseville; Jerry L. Alexander, St. Paul Park, and Frank C. Lunquist, New Brighton, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

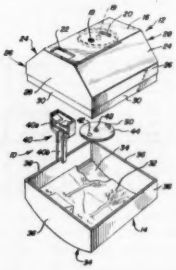
Filed Dec. 26, 1972, Ser. No. 318,256
Int. Cl. B41b *17/32*
U.S. Cl. 95—85 **17 Claims**

A template useful in a device for forming visible graphics on a radiation activated composite strip material. The template comprises a radiation transmissive supporting member with a thin highly reflective coating. The coating has at least one sharply defined opening to define a window corresponding to a graphic to be formed through which window the strip material may be irradiated in a graphic pattern. The coating may also have an opening to afford viewing the portion of the strip material adjacent the window to facilitate spacing graphics sequentially formed along the strip material.

3,828,360
COMBINATION CAMERA AND DEVELOPER TANK

Allen B. Dicus, River Forest, Ill., assignor to DKL Industries, Inc., Chicago, Ill.

Filed May 10, 1973, Ser. No. 359,189
Int. Cl. G03b *17/50*
U.S. Cl. 354—89 **10 Claims**



A combination camera and developer tank formed by a pair of separate light tight sections allows film sheets to be exposed and developed therein without the addition of further apparatus. A film sheet is held in the camera by flexing it against

a concave surface in the rear section of the camera. The front section of the camera contains an aperture and rotatable shutter which aligns a pin-hole defined therein with the aperture to expose the film. Processing solutions are introduced into the camera through a light tight liquid passage which directs the solutions to the film surface. The camera is formed with a convex rear exterior to provide a rocking surface for distributing the solutions across the surface of the film sheet.

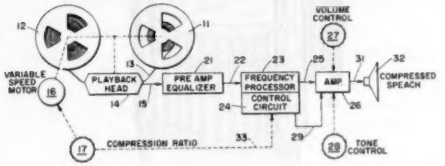
3,828,361
SPEECH COMPRESSOR-EXPANDER

Murray M. Schiffman, Westport, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.; Sanford D. Greenberg, Washington, D.C.; DT Liquidating Partnership, New York, N.Y. and Murray M. Schiffmam, Westport, Conn.

Continuation-in-part of Ser. No. 171,571, Aug. 13, 1971, Pat. No. 3,786,195. This application Feb. 12, 1973, Ser. No. 331,550

Int. Cl. G11b *15/46, 15/18, 19/28*

U.S. Cl. 360—25 **15 Claims**



An improved speech compressor provides frequency transformation by passing speech signals through an analog shift register and controlling the shift rate of the register with a linearly varying periodicity with noise cancellation of the characteristic noise in the shift registers and the control of the sample period and output blanking to improve the signal output characteristic and minimize noise components therein. The system provides a single compression-expansion manual control which varies the record reproducer transport speed and the rate of change of the linearly varying pulse periodicity to provide a unitary control for selecting the corresponding compression ratio and automatically modifies the sample period to optimize the signal and discard intervals as the selected compression or expansion ratio is changed.

3,828,362
BINARY SIGNAL DATA DETECTION

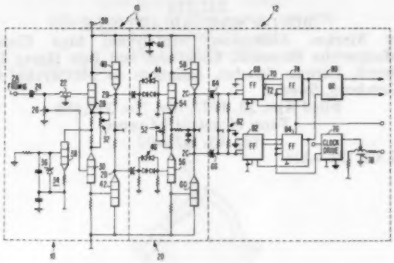
Sik-Kee Au, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 26, 1973, Ser. No. 327,034

Int. Cl. G11b *5/44*

U.S. Cl. 360—45 **13 Claims**

A binary data signal is detected by shaping readout data in a pulse slimmer using a single delay line, and by center line clipping to eliminate high frequency noise from the output signal developed by the pulse slimming channel. The shaped signal is then separated, according to polarity, to achieve amplitude detection.



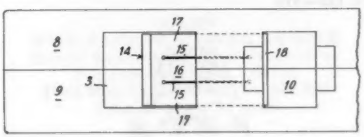
3,828,363
CASSETTE CONTAINING TWO HUBS CARRYING A MAGNETIC TAPE, FOR USE WITH RECORDING/REPRODUCING APPARATUS

Stanley Brice Lascelles Somers, 5 Quai du Mont Blanc, Geneva, Switzerland

Filed May 9, 1973, Ser. No. 358,700

Int. Cl. G11b *15/04, 23/04*

U.S. Cl. 360—60 **5 Claims**

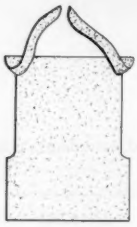


A cassette, containing magnetic tape carried between two hubs, to be used in a recording/reproducing apparatus, comprising two built in slides each of which is capable of being operated independently from the exterior of the cassette so that it can be placed at will in one or other of two positions which respectively block or unblock hollow spaces provided in the cassette, so that each slide when the cassette is placed in the apparatus either prevents or permits a control lever to enter into the hollow space, the position of this lever controlling the possibility of the erase and record heads being operative and the reproduce head being inoperative, or vice versa.

DESIGNS

AUGUST 6, 1974

232,276
BIB OR SIMILAR ARTICLE
Lars Marten Andersson, Molnlycke, Inga Gunilla Margaretha Strandell, Goteborg, and Eric Harry Ove Svard, Lerum, Sweden, assignors to Molnlycke AB, Goteborg, Sweden
Filed Apr. 30, 1973, Ser. No. 355,486
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—226

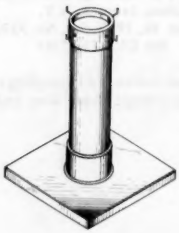


232,277
SHOE
John Vargo, Cleveland, Ohio, assignor to International Seaway Trading Corporation, Cleveland, Ohio
Filed Apr. 13, 1972, Ser. No. 243,927
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310

232,278
TOOTHBRUSH
Richard J. Gallo, 23 The Keel, The Moorings, East Islip, N.Y. 11730
Filed May 11, 1972, Ser. No. 252,540
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—15

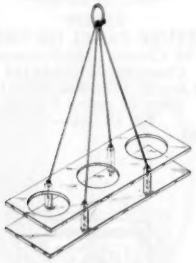
232,279
CIRCULAR CRIB
Taylor F. White, Longwood, Fla. (11004 Cedar Creek Road, Louisville, Ky. 40229)
Filed Aug. 21, 1972, Ser. No. 282,472
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—16

232,280
HOUSEHOLD CADDY
Neely O. Bingham, 1108 S. Ike, Monahans, Tex. 79756
Filed Sept. 8, 1972, Ser. No. 287,212
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—28

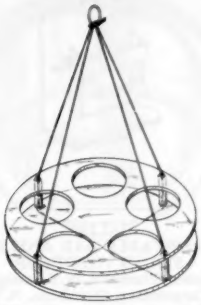


232,281
ARMCHAIR
Alex Strassle, Kirchberg, Switzerland, assignor to Intercollection Development SA, Kirchberg, Switzerland
Filed Jan. 8, 1973, Ser. No. 321,953
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

232,282
HOLDER FOR FLOWER POTS OR SIMILAR ARTICLES
Edward A. Wagschal, 21 E. 62nd St., New York, N.Y. 10021
Filed Aug. 30, 1972, Ser. No. 284,924
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—114



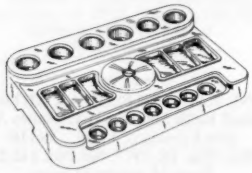
232,283
HOLDER FOR FLOWER POTS OR SIMILAR ARTICLES
Edward A. Wagschal, 21 E. 62nd St., New York, N.Y. 10021
Filed Aug. 30, 1972, Ser. No. 284,925
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—114



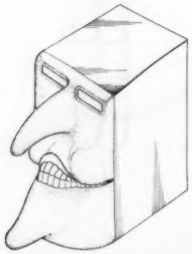
232,284
WINE RACK OR SIMILAR ARTICLE
Ronald Keith Shuck, 351 Dorantes Ave., San Francisco, Calif. 94116
Filed Mar. 16, 1973, Ser. No. 342,254
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114

232,285
COMBINED SHELF, RACK AND TELEPHONE RECEIVER SUPPORT
Obed Fischer, Westport, S. Dak.
(Rte. 1, Box 17, Aberdeen, S. Dak. 57401)
Filed Mar. 28, 1972, Ser. No. 239,007
Term of patent 3½ years
Int. Cl. D6—*04*
U.S. Cl. D6—136

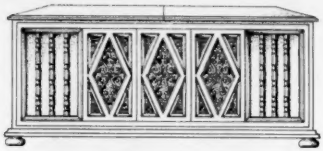
232,286
COMBINED PORTABLE BAR AND REMOVABLE STAND THEREFOR
Jerry H. Galuten, Elmhurst, N.Y., assignor to Placix Corporation, Woodside, N.Y.
Filed Jan. 9, 1973, Ser. No. 322,139
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



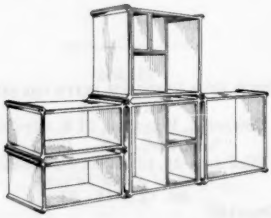
232,287
CHEST OF DRAWERS OR SIMILAR ARTICLE
Joseph H. Forrester, 9903 Melgar Drive, Whittier, Calif. 90601
Original design application June 22, 1970, Ser. No. 23,579. Divided and this application July 3, 1972, Ser. No. 268,438
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—152



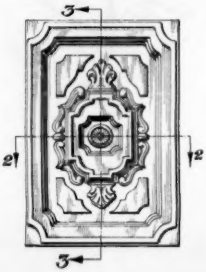
232,288
CABINET
Robert Levine, Roslyn, N.Y., assignor to Capehart Corporation, New York, N.Y.
Filed July 19, 1972, Ser. No. 273,137
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



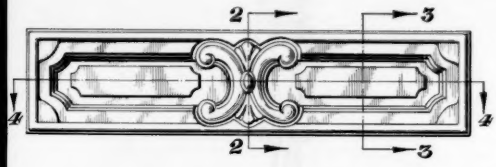
232,289
SHELF UNIT
Billy Moretine, Chicago, Ill., assignor to International Design Corporation, Chicago, Ill.
Original design application Nov. 10, 1971, Ser. No. 197,643, now abandoned. Divided and this application May 30, 1973, Ser. No. 365,047
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—18 G



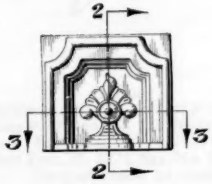
232,290
FURNITURE PANEL OR THE LIKE
Richard M. Chapin, 2200 Pinewood Circle, Charlotte, N.C. 28211
Filed Jan. 2, 1973, Ser. No. 319,975
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—193



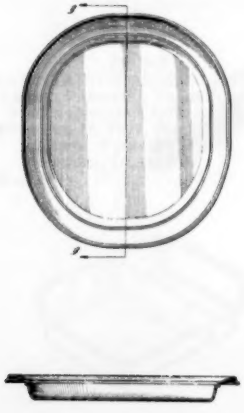
232,291
FURNITURE DRAWER FRONT OR THE LIKE
Richard M. Chapin, 2200 Pinewood Circle, Charlotte, N.C. 28211
Filed Jan. 2, 1973, Ser. No. 320,513
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—193



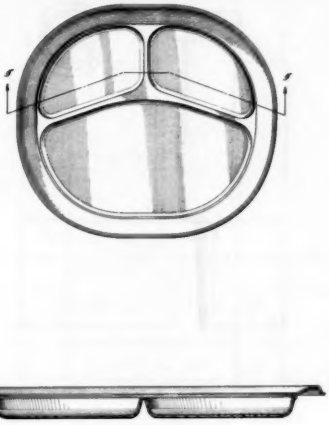
232,292
FURNITURE PANEL OR THE LIKE
Richard M. Chapin, 2200 Pinewood Circle, Charlotte, N.C. 28211
Filed Jan. 2, 1973, Ser. No. 320,514
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—193



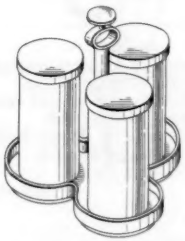
232,293
NESTABLE PLATE
Hubert E. Christian and David W. Lee, Phoenix, Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 21, 1973, Ser. No. 362,352
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



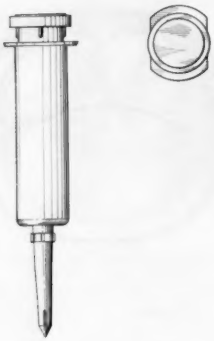
232,294
DIVIDED PLATE
Hubert E. Christian and David W. Lee, Phoenix, Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 21, 1973, Ser. No. 362,353
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—27



232,295
SERVER FOR INSTANT COFFEE OR THE LIKE
Edward Vujnovic, 99 Ashland Ave., Buffalo, N.Y. 14222
Filed Feb. 5, 1973, Ser. No. 329,724
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—58



232,296
FOOD SEASONING SYRINGE
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Company, Kansas City, Mo.
Filed Oct. 17, 1972, Ser. No. 300,399
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—106



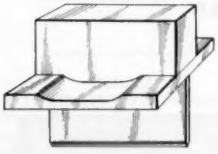
232,297
BLENDER
Jean Mantelet, Paris, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France
Filed June 1, 1972, Ser. No. 258,916
Claims priority, application France Dec. 3, 1971
Term of patent 7 years
Int. Cl. D7—*04*
U.S. Cl. D7—154

232,298
COMBINED CLEANING HEAD AND NOZZLE
Judson O. Jones, Greenville, S.C., assignor to Hydrotex Corporation
Filed Sept. 11, 1972, Ser. No. 287,683
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—173

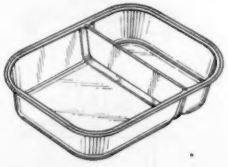
232,299
HEAD FOR COMBINATION SNOW BRUSH AND ICE SCRAPER
Maurice Epstein, 2623 Charney Road, Cleveland, Ohio 44118
Filed Oct. 10, 1972, Ser. No. 295,877
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—183

232,300
SCREW DRIVER WITH WIRE STRIPPER
Marvin J. Freed, 8 Leviton St., Tel Aviv, Israel
Filed Sept. 12, 1972, Ser. No. 288,352
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—87

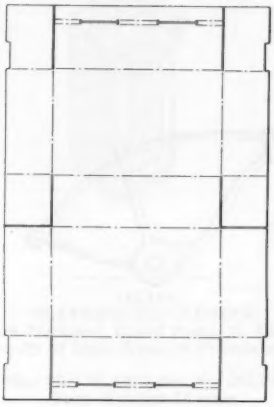
232,301
HAND MANIPULATABLE BLADE
Thomas P. O'Donnell, 220 Highland Blvd., Brooklyn, N.Y. 11207
Filed Dec. 27, 1971, Ser. No. 212,883
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



232,302
FOOD CONTAINER OR SIMILAR ARTICLE
Frank S. Lazure, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Oct. 15, 1971, Ser. No. 189,557
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



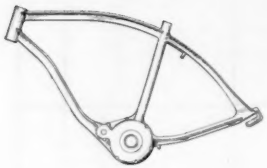
232,303
BOX BLANK
Robert A. Bamburg and Farris N. Duncan, West Monroe, and Roger M. Floyd, Monroe, La., assignors to Olinkraft, Inc.
Filed Aug. 30, 1972, Ser. No. 285,008
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



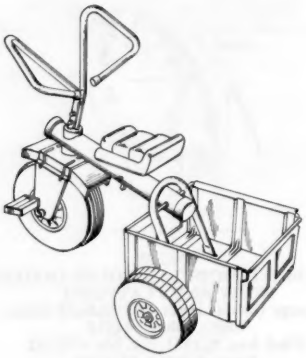
232,304
CLOCK OR SIMILAR ARTICLE
Mark Wallach, 220 E. 63rd St., New York, N.Y. 10021
Filed Oct. 1, 1971, Ser. No. 185,921
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—22

232,305
COMBINED MODULAR HOUSE TRAILER BODY AND PLATFORM
George Charles Innes, 508 Stafford Drive, Elyria, Ohio 44035
Filed Aug. 9, 1971, Ser. No. 173,742
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103

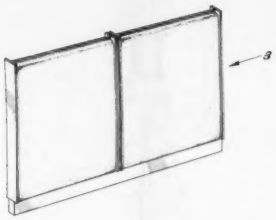
232,306
BICYCLE FRAME
Alfred F. Bauer, Toledo, Ohio, assignor to N L Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,198
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



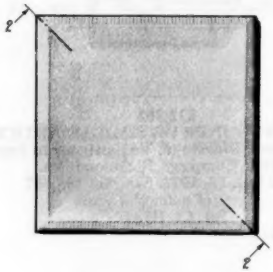
232,307
VELOCIPEDE
William L. Manofsky, Nashville, Tenn., assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed July 19, 1972, Ser. No. 273,126
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



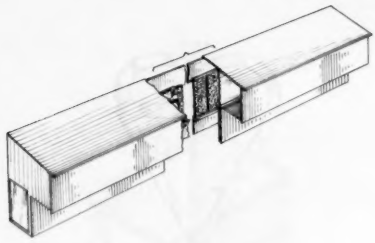
232,308
WALL PARTITION
Edward Peter Totoonchie, Van Nuys, Calif., assignor to Versa Wall Inc., Canoga Park, Calif.
Filed Jan. 31, 1972, Ser. No. 222,458
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 K



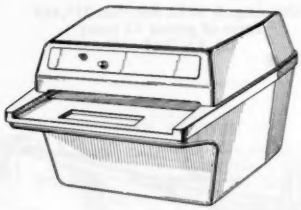
232,309
MOLDED PANEL OR SIMILAR ARTICLE
James M. Long, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Apr. 17, 1972, Ser. No. 245,018
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



232,310
AGRIBUILDING COOLING PAD PLENUM
George E. France, Rte. 2, Box 60, Oswego, Ill. 60543
Filed May 8, 1972, Ser. No. 251,601
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139

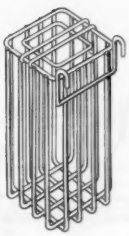


232,311
TEST-SCORING MACHINE
Gary R. Oberg, Spirit Lake, Iowa, assignor to Valtest, Inc., Minneapolis, Minn.
Filed July 24, 1972, Ser. No. 274,279
Term of patent 3½ years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

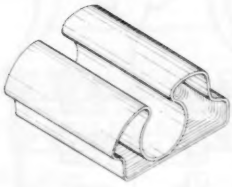


232,312
POWER LINE STANCHION
Ross Forney, Renner, Tex., assignor to Forney Engineering Company, Dallas, Tex.
Filed Oct. 11, 1972, Ser. No. 296,709
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—12

232,313
ANIMAL FEEDER
Albert J. Whitty, 39055 Lyndon, Livona, Mich. 48154
Filed Jan. 5, 1973, Ser. No. 321,209
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



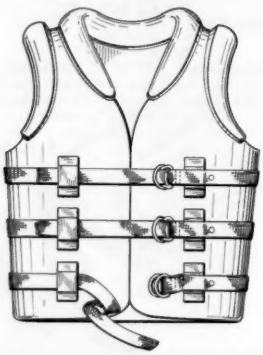
232,314
PLAYGROUND CLIMBER
Nancy Reed Markusen, Grand Forks, N. Dak., assignor to University of Idaho Research Foundation, Moscow, Idaho
Filed May 30, 1972, Ser. No. 258,221
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 H



232,315
TRAINING DEVICE FOR BOWLING ALLEY
Len Casey, 5924 SW. 68th St., South Miami, Fla. 33143
Filed July 18, 1972, Ser. No. 272,941
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 DD

232,316
GOLF PUTTER HEAD
Raymon W. Cook, 406 Top Hill, San Antonio, Tex. 78209
Filed Sept. 29, 1972, Ser. No. 293,525
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

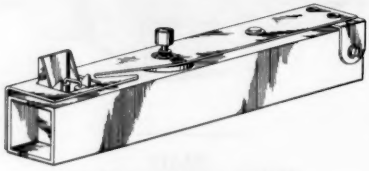
232,317
LIFE PRESERVER JACKET
James W. Rutland, Cypress Gardens, Fla., assignor to Florida Cypress Gardens, Inc., Cypress Gardens, Fla.
Filed Jan. 10, 1973, Ser. No. 322,314
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D34—43



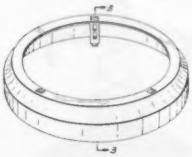
232,318
HUMPTY DUMPTY RACER TOY
Paul L. Luzius, Brentwood, Tenn., and Jerrold J. Krumholz, West Orange, N.J., assignors to Kusan, Inc., Nashville, Tenn.
Filed May 22, 1973, Ser. No. 362,656
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN

232,319
JEWELRY FINDING
Mario A. Caputo, 9 Cornerwood Court, Gaithersburg, Md. 20760, and Hilda A. Valenta, 4601 Alcon Drive, Camp Springs, Md. 20031
Filed June 18, 1973, Ser. No. 370,596
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 S

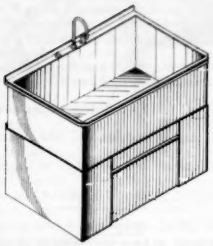
232,320
YARN SPLICER OR SIMILAR ARTICLE
D. Wayne Bledsoe, 1928 Dug Gap Road, Dalton, Ga. 30720, and R. Alton Cadenhead, P.O. Box 810, Fitzgerald, Ga. 31750
Filed Aug. 2, 1972, Ser. No. 277,419
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D47—5



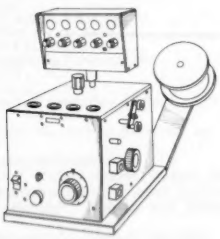
232,321
RING FOR USE IN THE CONSTRUCTION OF A LAMPSHADE
Paul Boissevain, Feltham, England, assignor to Merchant Adventurers Limited, Feltham, Middlesex, England
Filed Dec. 6, 1971, Ser. No. 205,471
Claims priority, application Great Britain June 7, 1971
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—7 A



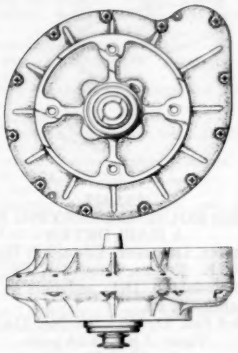
232,322
PARTS WASHING DEVICE
Edward Lee, Winnipeg, Manitoba, Canada, assignor to Solv-X Inc., Mississauga, Ontario, Canada
Filed Jan. 25, 1972, Ser. No. 220,723
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—1 R



232,323
COIL WINDER
Raymond F. Kimball, Arcadia, Calif., assignor to Eubanks Engineering Co., Monrovia, Calif.
Filed Dec. 19, 1972, Ser. No. 316,590
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 F

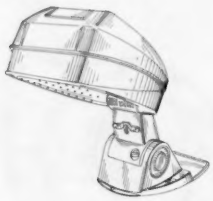


232,324
SUPERCHARGER
Thomas R. Drouin, 133 Prospect St., East Hartford, Conn. 06604
Filed Oct. 19, 1972, Ser. No. 300,780
Term of patent 7 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A

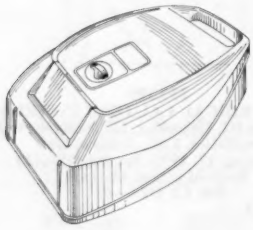


232,325
ELECTROSURGICAL CAUTERY INSTRUMENT
John G. Durden III, Chamblee, Ga., assignor to Durden Enterprises, Ltd., Auburn, Ga.
Filed Aug. 17, 1973, Ser. No. 389,423
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12

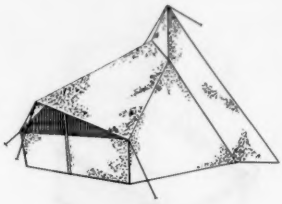
232,326
HAIR DRYER
Robert S. Waters, Lancaster, Edward J. Doyle, Hatboro, and Meyric K. Rogers, Lancaster, Pa., and Nial C. Bartram, Wilmington, Del., assignors to Schick Incorporated, Lancaster, Pa.
Filed Feb. 22, 1973, Ser. No. 334,627
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



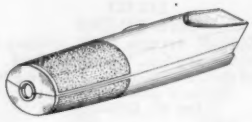
232,327
COMBINED HOUSING CARRYING CASE FOR A HAIR DRYER
Robert S. Waters, Lancaster, Edward J. Doyle, Hatboro, and Meyric K. Rogers, Lancaster, Pa., and Nial C. Bartram, Wilmington, Del., assignors to Schick Incorporated, Lancaster, Pa.
Filed Feb. 22, 1973, Ser. No. 334,680
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



232,328
TENT
Arthur J. Kirkham, 24 West 5th South, Salt Lake City, Utah 84104
Filed Feb. 17, 1972, Ser. No. 227,322
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D88—3 B



232,329
ELECTRIC HAIR CLIPPER CASING
Alfred W. Madl, Glendale, Wis., assignor to Oster Corporation, Milwaukee, Wis.
Filed Oct. 30, 1972, Ser. No. 301,791
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 6TH DAY OF AUGUST, 1974

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Bassett, Ronald M., to International Register Company. Spring driven timer. 3,827,232, Cl. 58-21.130.

Battelle Memorial Institute: *See—*
Doniat, Denis; Porta, Augusto; and Mosetti, Jacques, 3,827,961.

Batzer, Hans; Habermeier, Juergen; and Porret, Daniel, to Ciba-Geigy AG. Diglycidyl ethers of five and six membered N-heterocyclic compounds. 3,828,045, Cl. 260-260.000.

Bauer, Richard H., Jr.; Schuldt, David A.; and Shum, Edward K., to D-TEK. Intrusion alarm actuating apparatus. 3,828,340, Cl. 340-276.000.

Baum, Charles S., to Textron Inc. Method of making tire stud. 3,827,885, Cl. 75-208.00r.

Baum, Richard C., to Singer Company, The. Decreased rotation rate scanning device. 3,828,124, Cl. 178-7.600.

Baumann, Bernard, to CEGEDUR Societe de Transformation de l'Aluminium Pechiney. Method of making thermoplastic lined metal bodies. 3,827,130, Cl. 29-421.000.

Baumann, Hans: *See—*
Kast, Helmut; Baumann, Hans; Mayer, Udo; and Oberlinner, Andreas, 3,828,071.

Baumann, Hans; and Mayer, Udo, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of oxasine dyes with arylamino groups. 3,828,035, Cl. 260-242.000.

Baumgarten, Carl B., to Gomco Manufacturing Corporation. Automatic shut-off valve. 3,827,452, Cl. 137-205.000.

Baumgartner, Heinrich; and Schultze, Manfred, to Siemens Aktiengesellschaft. Operational method and apparatus for the representation of characters. 3,828,343, Cl. 340-324.00a.

Baxter, Robert O.; Byars, Carl A.; Nadaskay,Richard J.; and Roark, Lamar P., to International Paper Company. Packaging carrier. 3,827,614, Cl. 224-45.00h.

Bayer Aktiengesellschaft: *See—*
Bien, Hans-Samuel; Harms, Wolfgang; Schmitz, Reinold; Schmitz, Reinold; and Leister, Heinrich, 3,828,040.
Lorenz, Watter; Boshagen, Horst; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,828,063.
Von Bonin, Wulf, 3,827,869.
Widdig, Arno; Kuhle, Englebert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,828,094.

Bays, David Edmund; and Foster, Roy Vivian, to Allen & Hanburys Limited. Benzoylphenylacetic acids and related compounds. 3,828,093, Cl. 260-469.000.

BBC Brown Boveri & Company Limited: *See—*
Floessel, Carl Dieter; and Floessel, Klaus, 3,827,731.
Horler, Hansulrich, 3,827,770.
Laronze, Joseph, 3,828,211.

Beattie, Thomas R.; Ruyle, William V.; Shen, Tsung-Ying; Walford, Gordon L.; and Walton, Edward, to Merck & Co., Inc. Gentamicin C, derivatives. 3,828,021, Cl. 260-210.0ab.

Beaudet, Maurice, to Galt Equipment Ltd. Shipping container with removable environmental control unit. 3,827,478, Cl. 165-42.000.

Beebe, William F.: *See—*
Neff, Charles G.; and Beebe, William F., 3,827,723.

Beecham Group Limited: *See—*
Granchelli, Felix E., 3,828,053.
Quick, John Kirby; Richardson, Kenneth; and Utting, Kenneth, 3,828,074.

Beets, Roland H. C.: *See—*
Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., 3,827,539.

Behrenz, Wolfgang: *See—*
Lorenz, Watter; Boshagen, Horst; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,828,063.

Belart, Juan, to ITT Industries, Inc. Antiskid brake system with power assistance. 3,827,759, Cl. 303-21.0cf.

Bell & Howell Company: *See—*
Hapke, Kenyon A.; Johnson, Edwin S.; and Sidlo, Joseph J., 3,827,779.

Bell Telephone Laboratories, Incorporated: *See—*
Blane, Leslie Lewis; Bottonari, Kenneth Charles; and Lewis, Edward Earl, 3,828,140.
Butherus, Alexander Duane; Phillips, James Charles; and Scrosati, Bruno, 3,827,913.
Carbrey, Robert Lawrence, 3,828,145.
Fischer, Robert Frederick; North, James Clayton; and Wolfe, Raymond, 3,828,329.
Flanagan, James Loton; Rabiner, Lawrence Richard; and Schafer, Ronald William, 3,828,132.
Lewis, Theras Gordon, 3,828,146.

Bellin, Jack L. S.: *See—*
Cusick, John H.; Brown, Alvin E.; Hamamoto, Al S.; and Bellin, Jack L. S., 3,827,619.

Belson, Ross A.; and Palombo, Gaston A., to Honeywell Inc. Ramped-step signal generating circuit. 3,828,203, Cl. 307-228.000.

Belue, James G.; and Jones, Weston C. Drying chamber apparatus. 3,827,639, Cl. 239-552.000.

Benander, Vincent A. Simulated basketball game. 3,827,691, Cl. 273-85.00r.

Bendix Corporation, The: *See—*
Feintuch, Martin William, 3,827,659.
Glynn, Donald C.; Chao, Andrew M.; and Carter, George E., 3,828,261.
McPhee, Walter J.; and Sondergard, Richard D., 3,828,122.
Shaw, Benjamin Chandler, 3,828,207.

Benedict, Donald W.: *See—*
Gregory, Gerald H.; and Benedict, Donald W., 3,827,471.

Bennett, Charles D.; Coates, Peter M.; and Coates, Robert N., to Cam Industries, Inc. and Operator programmed numerical control system. 3,828,318, Cl. 340-172.500.

Bennett, John T. Tool holder with provisions for accurately positioning cutting inserts and an improved chip breaking indexible insert. 3,827,119, Cl. 29-105.00r.

Bennett, Kenneth R.; and Crownover, Joseph W., to GTI Corporation. Tuning of encapsulated precision resistor. 3,827,142, Cl. 29-620.000.

Benson, James L.; and Sellmann, William, to Evans, George, Corporation, The. Knock-down shipping cable reel. 3,827,651, Cl. 242-115.000.

Beresniewicz, Aleksander, to Du Pont de Nemours, E. I., and Company. Aqueous dispersions of vinyl ester polymers. 3,827,996, Cl. 260-29.6wb.

Berger, Helmut: *See—*
Mika, Norbert; Schuldreich, Rudolf; and Berger, Helmut, 3,828,196.

Berglund, Neil C.; Kerr, John W.; and Petrie, Jerome U., to International Business Machines Corporation. Simplified storage protection and address translation under system mode control in a data processing system. 3,828,327, Cl. 340-172.500.

Bergomi, Joseph G., Jr., to Monsanto Company. Flame-resistant compositions of ethylene/vinyl chloride interpolymers and hydrated alumina. 3,827,997, Cl. 260-29.6ta.

Berlant, Sigmund F. Air curtain device incorporating ultraviolet light. 3,827,862, Cl. 21-74.00r.

Berns, Avalo A. Hip clamp and lifting frame for bovine quadrupeds. 3,827,406, Cl. 119-100.000.

Berrie, Robert W., to Omnico Systems International, Inc. Prefabricated building construction. 3,827,203, Cl. 52-236.000.

Berry Metal Company: *See—*
Rymarchyk, Nicholas M.; and Meinert, Leo L., 3,827,632.

Bertelsen, William R. Gimbal ground effect vehicles. 3,827,527, Cl. 180-120.000.

Berthet, Michel, to Compagnie Generale D'Electricite. Electrical connection, in particular, for connecting two cooled conductors disposed in a vacuum. 3,828,111, Cl. 174-15.00e.

Bespalov, Evgeny Ivanovich: *See*—
Samoilov, Sergei Mikhailovich; Ivanov, Vladimir Ivanovich; Zambrovskaya, Galina Vladimirovna; Tsvetkov, Oleg Nikolaevich; Monastyrsky, Viktor Nikolaevich; Bespalov, Evgeny Ivanovich; Gryaznov, Boris Vasilievich; and Molchanov, Boris Vladimirovich, 3,828,01.

Besuden, David W., to Magnum Automotive Equipment, Inc. Power column latch. 3,827,474, Cl. 157-1.280.

Betere, Antonio, to Fabricas Lucia Antonio Betere, S.A. Method for the continuous production of needled multi-ply materials. 3,827,112, Cl. 28-72.20r.

Bethlehem Steel Corporation: *See*—
Wechsler, Richard L., 3,827,134.
Wheeler, James E., 3,827,680.

Betts, Paul J., to Browne-Morse Company. Paper tray. 3,827,570, Cl. 211-10.000.

Betz Laboratories, Inc.: *See*—
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,827,873.

Bickel, Quentin D. Taillight assembly. 3,828,178, Cl. 240-7.10r.

Bien, Hans-Samuel; Harms, Wolfgang; Schmitz, Reinold; Schmitz, Reinold; and Leister, Heinrich, to Bayer Aktiengesellschaft. Anthraquinone reactive dyestuffs. 3,828,040, Cl. 260-249.000.

Bieniok, Joachim, to Heberlein & Co. AG. Device for selectively changing the sense of rotation of the twist tubes of a false-twist machine. 3,827,229, Cl. 57-77.450.

Bierman, Jacob. Portable carrier. 3,827,707, Cl. 280-36.00c.

Biesinger, Erwin, to Seco Maschinenbau GmbH & Co. KG. Method and apparatus for distilling of solvents in which foreign matter is dissolved. 3,827,476, Cl. 159-44.000.

Bike Alarm, Ltd.: *See*—
Miller, Albert J., 3,828,310.

Billard, Stephen L.: *See*—
Vigil, Jacob F.; Billard, Stephen L.; Oropesa, Joel T.; and Armstrong, Ralph W., Jr., 3,828,324.

Bilsback, Malvin S., to International Business Machines Corporation. Integrated packaging arrangement for gas panel display device. 3,828,215, Cl. 313-50.000.

Bio/Physics Systems, Inc.: *See*—
Kamentsky, Louis A.; and Klinger, Isaac, 3,827,555.

Biological Concepts, Inc.: *See*—
Rudel, Harry W., 3,828,106.

Biometrics, Inc.: *See*—
Molner, Stanley F.; and Newman, Joel S., 3,827,789.

Birch, Arthur I.; and Brown, Darrell E. Check-valve for tracheotomy tubes. 3,827,440, Cl. 128-351.000.

Bishop, French, Jr.: *See*—
Serfass, Earl J.; Lindsay, Edward R., Jr.; Holmes, Gene Myron; Aid, James D.; and Bishop, French, Jr., 3,827,561.

Bissinger, Charles Clarence, Sr. Protection units for the seats of school buses and the like. 3,827,752, Cl. 297-452.000.

Bizot, Jean; and Sausse, Andre, to Rhone-Poulenc S.A. Process for the regeneration of a haemodialysis liquid. 3,827,975, Cl. 210-22.000.

Blake, David Edward, to Electroprint, Inc. Toner fixing method and apparatus. 3,827,855, Cl. 432-60.000.

Blane, Leslie Lewis; Bottonari, Kenneth Charles; and Lewis, Edward Earl, to Bell Telephone Laboratories, Incorporated. Calling line identification system. 3,828,140, Cl. 179-18.0fh.

Blanshine, Allison W.; Crane, Jack W.; and Mast, Aquila D., to Sperry Rand Corporation. Hay roll forming machine. 3,827,223, Cl. 56-341.000.

Bledsoe, D. Wayne; and Cadenhead, R. Alton. Apparatus for joining thermoplastic material. 3,827,929, Cl. 156-502.000.

Bley, Erich. Rotatable resilient punch and die cutter apparatus. 3,827,321, Cl. 83-117.000.

Blickensderfer, Robert; and Blickensderfer, Robert, III. Tire traction device. 3,827,473, Cl. 152-218.000.

Blickensderfer, Robert, III: *See*—
Blickensderfer, Robert; and Blickensderfer, Robert, III, 3,827,473.

Bliss, Robert A., to Hoerner Waldorf Corporation. Double wall tray. 3,827,621, Cl. 229-34.0hw.

Blitz, Hans-Dieter: *See*—
Arndt, Peter Joseph; Blitz, Hans-Dieter; Huebner, Klaus; Krall, Wilhelm; Kurth, Hans-Joachim; Mueller, Manfred; and Pennewiss, Horst, 3,828,012.

Blocked Iron Corporation: *See*—
Imperato, Louis George, Jr., 3,827,876.

Blomenkamp, Robert W., to Physics International Company. Demodulator for frequency-burst-duration modulated signals. 3,828,263, Cl. 329-106.000.

Blouch, John H., to Sycamore Manufacturing Company, Inc. Apparatus for lining bottle crowns with thermoplastic material. 3,827,843, Cl. 425-127.000.

Blum, Rudolf, to Triumph Werke Nuernberg A.G. Character storage arrangement for a powered typewriter action. 3,827,542, Cl. 197-16.000.

BMR Security Products Corporation: *See*—
Walters, Russell W., 3,827,266.

Bocabeille, Gilbert; and Augris, Rene, to Compagnie Industrielle des Telecommunications Cie. Dialling discriminator. 3,828,131, Cl. 178-69.00g.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See*—
Riethmuller, Lothar H.; Sponholz, Richard; Kiefer, Hans; and Spreitzhofer, Ernst, 3,828,259.

Boe, Christian Thorkild; and Dawids, Steen Gamwell, to Aktieselskabet de Danske Sukkerfabrikker. Supporting plates for the membranes of a dialyzer, particularly for hemodialysis. 3,827,563, Cl. 210-321.000.

Boggs, Luther Miles; Flichman, Howard John; and Hudson, James Alphus, Jr., to Western Electric Company, Incorporated. Methods of and apparatus for measuring the thickness of successive sections of a cable jacket. 3,827,287, Cl. 73-67.80s.

Boggs, William E.; Boro, Franklin; Linderman, William A.; and Snow, Roland B., to United States Steel Corporation. Method of retarding metal scale formation with carbon-containing MgO-B_2O_3 coatings. 3,827,922, Cl. 148-27.000.

Bolden, James D.; and Koller, Floyd G., to Auto-Valve, Inc. Low pressure ball valve with annular seal. 3,827,671, Cl. 251-84.000.

Boldt, Allyn L., to United States of America, Atomic Energy Commission. Radioactive waste storage. 3,828,197, Cl. 250-506.000.

Bolinger, John F.; and Leathem, Douglas B., to Meridian Industries, Inc. Clutch and ignition interlock. 3,827,540, Cl. 192-.084.

Bolitho, Walter J. Unitary cellular-structured cooking fire apparatus. 3,827,423, Cl. 126-29.000.

Boller, George E.; and Renk, Richard J., to Gladys Miller. Traction motor suspension bearing lubricator. 3,827,769, Cl. 308-132.000.

Bollinger, Luther L., Sr.: *See*—
Hennessy, James J., Jr.; and Bollinger, Luther L., Sr., 3,827,768.

Bom, Nicolaas, to Erasmus Universiteit. Method of manufacturing a catheter. 3,827,115, Cl. 29-25.350.

Bond, Kenneth Arthur George; Munro, Roger Cameron; and Hayler, Reginald, to Gelman Instrument Company. Device for blood sedimentation rate estimation. 3,827,286, Cl. 73-61.400.

Boney, Warren X.: *See*—
Lambert, Russell R., Sr., 3,827,586.

Booth, Gary E.: *See*—
Lyness, Warren I.; Amel, Ronald T.; and Booth, Gary E., 3,828,060.

Borax Consolidated Limited: *See*—
Greeson, Henry Edward, 3,827,880.

Borg, Henry A., to United States of America, Army. Vehicle test fixture. 3,827,289, Cl. 73-71.700.

Boro, Franklin: *See*—
Boggs, William E.; Boro, Franklin; Linderman, William A.; and Snow, Roland B., 3,827,922.

Bosch, Robert, G.m.b.H.: *See*—
Faupel, Werner; and Zibold, Karl, 3,827,832.
Linder, Ernst; Zechnall, Richard; Wahl, Josef; and Schmidt, Peter Jurgen, 3,827,237.
Straub, Steffen, 3,828,179.

Boschetti, Eugene; Molho, Darius; and Fontaine, Louis, to Lipha, Lyonnaise Industrielle Pharmaceutique. Aminoalcohols derived from ortho-trans-hydroxy-cinnamic acids and esters. 3,828,095, Cl. 260-471.00r.

Boshagen, Horst: *See*—
Lorenz, Watter; Boshagen, Horst; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,828,063.

Bosman, Hans Harold: *See*—
Buckett, William Roger; and Bosman, Hans Harold, 3,828,050.

Bottonari, Kenneth Charles: *See*—
Blane, Leslie Lewis; Bottonari, Kenneth Charles; and Lewis, Edward Earl, 3,828,140.

Boudouris, Angelo; and Gray, Geoffrey T., to Eprad Incorporated. Reflector apparatus. 3,827,782, Cl. 350-295.000.

Boulus, Paul A. Method of cleaning thick covering textile materials and composite cleaning pad therefor. 3,827,857, Cl. 8-137.000.

Bourne, Richard Curtis. Unitary electrical receptacles. 3,828,113, Cl. 174-55.000.

Bourseaux, Friedrich: *See*—
Arnold, Herbert; Bourseaux, Friedrich; Potel, Jurgen; and Brock, Norbert, 3,828,090.

Boyd, Donald R., to Allis-Chalmers Corporation. Magnetic actuator device. 3,828,288, Cl. 335-234.000.

Bradbery, Jack L.; Andersen, Todd G.; and Fechalos, William A., to Wescom, Inc. End mark controlled switching system and matrix. 3,828,314, Cl. 340-166.00r.

Bradley, Richard S., to Weigh-Tronix, Inc. Weight measuring hook block apparatus for cranes. 3,827,514, Cl. 177-147.000.

Bradley, Richard S., to Weigh-Tronix Incorporated. Moisture impervious impact shield for a transducer and method of making the same. 3,828,295, Cl. 338-6.000.

Bradshaw, Roy C.; and Hicks, Gus H., said Bradshaw assor. of 3/4 interest to said Hicks, Gus H. System for treating solid material. 3,827,158, Cl. 34-182.000.

Braginetz, Paul A., to Morris, Philip, Incorporated. Blade dispenser. 3,827,597, Cl. 221-232.000.

Branchaud, Jean Marie. Door closing device. 3,827,105, Cl. 16-190.000.

Brand, Arnold J.: *See*—
Sacks, Sidney M.; Brand, Arnold J.; and Slump, William R., 3,828,347.

Brandinger, Jay Jerome; Pritchard, Dalton Harold; Fredendall, Gordon Lyle; and Schroeder, Alfred Christian, to RCA Corporation. Color signal producing system utilizing spatial color encoding and comb filtering. 3,828,121, Cl. 178-5.4st.

Brasie, William C., to Dow Chemical Company, The. Interfacial surface generator. 3,827,676, Cl. 259-4.000.

Bratchell, Robert Lyndon, to Concrete Industries (Monier) Limited. Prestressed rod laying means and method. 3,827,132, Cl. 29-433.000.

Braunmiller, Heinz: *See—*
Stephany, Christian; Braunmiller, Heinz; and Katzer, Johannes, 3,827,637.

Brazeway, Inc.: *See—*
Hickman, Stephen L.; and Griewahn, Carl O., 3,827,485.

Bredebusch, Heinrich, to Rotary Hoes Limited. Device for lubrication of horizontal wine and fruit presses with cylindrical press basket. 3,827,354, Cl. 100-289.000.

Brennan, Thomas J., to Stryker Corporation. Dental handpiece. 3,827,149, Cl. 32-26.000.

Breslow, David S., to Hercules Incorporated. Poly(aziridine)s. 3,828,024, Cl. 260-239.00e.

Brett, John J.: *See—*
Eidelberg, Jonah; Mooney, Thomas; and Brett, John J., 3,828,117.

Bretti, Franco: *See—*
De Sandre, Giovanni; Subrizi, Angelo; and Bretti, Franco, 3,828,322.

Bridgestone Liquefied Gas Company, Limited: *See—*
Yamamoto, Katsuro, 3,827,136.

Bridgestone Liquefied Gas Company Ltd.: *See—*
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Bridgestone Tire Company, Limited: *See—*
Tanihata, Akio; and Abe, Norio, 3,827,127.

Bridgestone Tire Company Ltd.: *See—*
Yamasaki, Hiroyuki; and Kaida, Masaaki, 3,828,309.

Briggs & Stratton Corporation: *See—*
Couchman, Robert Jr., 3,827,307.
Harkness, Joseph R.; Santi, John D.; and Lechtenbert, Leo J., 3,828,212.

Brink, Robert H., Jr.: *See—*
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,827,873.

Brink, Robert V., to Chicago Rawhide Manufacturing Company. Radial shaft seal with positive garter spring retention. 3,827,703, Cl. 277-153.000.

Brisk, Richard A.: *See—*
Heitman, Richard E.; Arciprete, Genio R.; Martin, Peter G.; Norris, Richard C.; and Brisk, Richard A., 3,828,323.

Brister, Beryle D. Installation, hydrostatic testing, repair, and modification of large diameter fluid transmission lines. 3,827,282, Cl. 73-40.50r.

Bristol, Thomas R.; Lakin, Harold; and Renga, Fred L., to Addressograph-Multigraph Corporation, mesne. Indexing mechanism for a collating and collecting apparatus. 3,827,312, Cl. 74-436.000.

British Railways Board: *See—*
Denham, Albert W.; and Redfern, Brian A. W., 3,827,129.

British Steel Corporation: *See—*
Greeson, Henry Edward, 3,827,880.

British Titan Limited: *See—*
New, George William, 3,828,223.

British United Shoe Machinery Co., Ltd., The: *See—*
Clarke, Ternece James Leonard; Quarmby, Robert Charles; and Matts, George Arthur, 3,827,464.

Broad, David Rex; Hatton, Leslie Roy; and Parnell, Edgar William, to May & Baker Limited. Thiophene derivatives. 3,828,001, Cl. 260-332.20c.

Brock, Norbert: *See—*
Arnold, Herbert; Bourseaux, Friedrich; Potel, Jurgen; and Brock, Norbert, 3,828,090.

Brola, Gabriel. Radiant heaters. 3,827,424, Cl. 126-92-b.

Brooks, Frank W., to General Motors Corporation. Disc brake parking brake. 3,827,534, Cl. 188-68.000.

Brooks, Herman H., to Sundstrand Data Comtrol, Inc. Demodulator for angularly related signals. 3,828,331, Cl. 340-179.000.

Brosene, William G., Jr., to Magnum Automotive Equipment, Inc. Lower bead breaker mechanism. 3,827,475, Cl. 157-1.280.

Brown, Alvin E.: *See—*
Cusick, John H.; Brown, Alvin E.; Hamamoto, Al S.; and Bellin, Jack L. S., 3,827,619.

Brown, Boveri & Cie AG: *See—*
Gammel, Gregor; Pawlowski, Peter H.; Heidtmann, Uwe; and Jons, Mattias, 3,827,480.

Brown, Darrell E.: *See—*
Birch, Arthur I.; and Brown, Darrell E., 3,827,440.

Brown, David E. Precision rotary index. 3,827,308, Cl. 74-88.000.

Brown, Donald: *See—*
Vutz, Norman; and Brown, Donald, 3,827,457.

Brown, Eldon W.: *See—*
Forse, Harry D.; and Brown, Eldon W., 3,827,425.

Brown, Kenneth, to Hepworth Plastic Limited. Pipe couplings. 3,827,734, Cl. 285-379.000.

Brown Oil Tools, Inc.: *See—*
Hall, Harold, 3,827,486.

Browne-Morse Company: *See—*
Betts, Paul J., 3,827,570.

Brownson, Ivan Frank. Water ski construction. 3,827,096, Cl. 9-310.00a.

Bruck, George; Faroudja, Yves C.; and Smaller, Philip, to Avco Corporation, mesne. Polychrome television recording and playback system. 3,828,129, Cl. 178-5.4cd.

Brucker, William S. Self healing clutch. 3,827,259, Cl. 64-28.00r.

Brulard, Michel, to Jeumont-Schneider. Switching enabling two electrical machines to motor or regenerate with their armatures in parallel or in series. 3,828,233, Cl. 318-87.000.

Bryant, Paul M., to International Technical Industries. Pressure sensing and indicating system. 3,828,333, Cl. 340-236.000.

Buckett, William Roger; and Bosman, Hans Harold, to Akzona Incorporated, mesne. 3-Alkoxy-14-acyloxydihydromorphinone derivatives. 3,828,050, Cl. 260-285.000.

Budai, Mikulas, to Ferd Ruesch Maschinenfabrik, Firma. Device for moving a web in a rotary printing press for the printing of varying formats. 3,827,358, Cl. 101-228.000.

Budd, Sidney Maurice, to United Glass Limited. Coating process for glass containers. 3,827,871, Cl. 65-60.000.

Buhayar, Eric S., to Scott Paper Company. Method and apparatus for changing the spacing between discrete, flexible web product. 3,827,545, Cl. 198-34.000.

Buhrke, Rolfe E.: *See—*
Wilber, John A.; Rice, Verner K.; and Buhrke, Rolfe E., 3,828,321.

Bunker Ramo Corporation: *See—*
Bushek, James A.; and Sorensen, David K., 3,828,118.
Cieniawa, Edward A.; and Palecek, Vincent J., 3,828,302.
Sladek, Norbert J.; Petti, Pasquale Ralph; and Zerlin, William Max Erich, 3,828,303.

Bunnell, Edward Dennman; and Parsons, Stuart L., to AMP Incorporated. Snap switch actuator. 3,828,151, Cl. 200-67.0da.

Burchette, Robert L., Jr. Collapsible dye spring or the like. 3,827,652, Cl. 242-118.110.

Burger Eisenwerke Aktiengesellschaft: *See—*
Tropp, Karl; Durth, Wilfried; and Jakob, Heinrich, 3,827,346.

Burgett, James F.; and Vanderberg, Lawrence J., to Ford Motor Company. Magnetic gauge circuit. 3,828,254, Cl. 324-101.000.

Burke, Richard L., to Colgate-Palmolive Company. Cleanser compositions containing both oxidizing and reducing agents. 3,827,868, Cl. 51-308.000.

Burlis, Norbert W., to Sherwood Medical Industries Inc. Blood oxygenation device. 3,827,860, Cl. 23-258.500.

Burrard Refrigeration Ltd.: *See—*
Williams, George H., 3,827,253.

Burroughs Corporation: *See—*
Dinerman, Bernard B.; and Schroeder, Franklin T., 3,828,320.
Fehnel, Richard Byrd, 3,828,218.
Schwanauer, Francis J., 3,828,271.
Stopper, Herbert, 3,828,202.
Vigil, Jacob F.; Billard, Stephen L.; Oropesa, Joel T.; and Armstrong, Ralph W., Jr., 3,828,324.

Burroughs Wellcome Co.: *See—*
Mann, George Forbes, 3,827,943.

Burton, Christopher Philip, to International Computers Limited. Monitoring and display apparatus. 3,828,342, Cl. 340-324.0ad.

Buser, Rudolf G.; and Kaunzinger, Helmuth M., to United States of America, Army. Electrstatic charge measuring device. 3,828,250, Cl. 324-72.000.

Bush, John E.: *See—*
Dettling, Ronald F.; Bush, John E.; and Zulkowski, Thomas R., 3,827,656.

Bushek, James A.; and Sorensen, David K., to Bunker Ramo Corporation. Electrical feedthrough assemblies for containment structures having specially controlled environments and method of making. 3,828,118, Cl. 174-11.00r.

Buske, Ervin. Wedge-tight clamp. 3,827,279, Cl. 72-457.000.

Butherus, Alexander Duane; Phillips, James Charles; and Scrosati, Bruno, to Bell Telephone Laboratories Incorporated. Solid electrolyte power source. 3,827,913, Cl. 136-83.00r.

Butler, Frank W. Boat trim construction. 3,827,092, Cl. 9-6.000.

Butler, Robert W.: *See—*
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Buttner, Gerhard, to Siemens Aktiengesellschaft. Electrical hearing aid. 3,828,142, Cl. 179-107.20r.

Byars, Carl A.: *See—*
Baxter, Robert O.; Byars, Carl A.; Nadaskay,Richard J.; and Roark, Lamar P., 3,827,614.

Byers, Lewis C. Safety latch for hoist hook. 3,827,746, Cl. 294-82.00r.

Byrne, Geoffrey A.; and Arthur, Jett C., Jr., to United States of America, Agriculture. Durable-press cotton textiles and method of making same. 3,827,858, Cl. 8-184.000.

Byron, W. H., Inc.: *See—*
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C-O Inc.: *See—*
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Cahen, Raymond M.; Debus, Henri R.; and Aga, Rene L., to Labofina S.A. Process for the purification of light paraffinic petroleum distillates. 3,827,974, Cl. 208-143.000.

Cairns, Elton J.; Shimotake, Hiroshi; and Selman, Jan R., to United States of America, Atomic Energy Commission. Homogeneous cathode mixtures for secondary electrochemical power-producing cells. 3,827,910, Cl. 136-6.0lf.

Cairns, John Francis; Colchester, John Edward; and Entwisle, John Hubert, to Imperial Chemical Industries Limited. Process for the manufacture of 1,1'-disubstituted-4, 4'-bipyridylium salts. 3,828,058, Cl. 260-296.00d.
California Injection Molding Co., Inc.: *See—*
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Callahan, Norman F., to Electrometallurgical Sales, Division of the Gilbert Tramer Co. Reflectivity-responsive control system for electrolytic finishing apparatus. 3,827,963, Cl. 204-228.000.
Callerame, Joseph, to Chemical Generators, Inc. Process for the preparation of chlorous acid. 3,828,097, Cl. 423-472.000.
Cam Industries, Inc.: *See—*
Bennett, Charles D.; Coates, Peter M.; and Coates, Robert N., 3,828,318.
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Canning, Glenn R. Pegboard display rack. 3,827,569, Cl. 211-7.000.
Canonica, Luigi; Danieli, Bruno; and Ferrari, Giorgio, to Dauten S.A. Insect moulting hormones, and method for their preparation and use. 3,828,082, Cl. 260-397.250.
Carbrey, Robert Lawrence, to Bell Telephone Laboratories, Incorporated. Communication system hybrid balance arrangement. 3,828,145, Cl. 179-170.0nc.
Card, Charles D.; and Crane, John R., to Sperry Rand Corporation. Character addressing in a word oriented computer system. 3,828,316, Cl. 340-172.500.
Carding Specialists (Canada) Limited: *See—*
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Carlson, Chesley F., Co.: *See—*
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Carroll, William M. Rotary material working apparatus. 3,827,116, Cl. 29-38.00c.
Carter, Charles H., Jr.; and Newfeld, Stewart M., to ICI America Inc. Alarm apparatus for facilitating the detection of an unauthorized removal of property. 3,828,341, Cl. 340-280.000.
Carter, George E.: *See—*
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Cash, Kenneth W., to International Business Machines Corporation. Adapter for interfacing a programmable controller to a data processor channel. 3,828,326, Cl. 340-172.500.
Caspi, Eliahu; and Aberhart, Donald J. Synthesis of 14 β hydroxysteroids. 3,828,029, Cl. 260-239.55r.
Cassel, Thomas R. Pipe coupling unit. 3,827,733, Cl. 285-382.200.
Caywood, James A.; McKeron, Charles E.; and Smith, Willard G., to Ford Motor Company. Tractor hydraulic lift control valve. 3,827,336, Cl. 91-446.000.
CEGEDUR Societe de Transformation de l'Aluminium Pechiney: *See-See—*
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Celada, Juan; Pena, Jesus Maria; MacKay, Patrick W.; de la Pena, Ramon; Martinez, Enrique Ramon; and de la Torre, Maria Teresa, to Fierro Esponja, S.A. Method for the gaseous reduction of metal ores. 3,827,879, Cl. 75-35.000.
Cellesta, Jerry J., to Muskateer Corporation. Insulating plug. 3,827,462, Cl. 138-90.000.
Centre for Industrial Research (CIR) Ltd.: *See—*
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Chabardes, Pierre; Gandilhon, Pierre; Grard, Charles; and Thiers, Michel, to Rhone-Poulenc S.A. Process for producing alkyl ester of ω-cyano-acids. 3,828,092, Cl. 260-465.400.
Chambers, Charles W., Jr., to Lorain Products Corporation. Disconnect circuit for telephone systems. 3,828,139, Cl. 179-16.00f.
Chambers, Charles W., Jr., to Lorain Products Corporation. Impedance simulating circuit for transmission lines. 3,828,281, Cl. 333-17.000.
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Charles, Maynard. Spark tester. 3,828,246, Cl. 324-18.000.
Charlton, John Cecil; and Lyons, Dermot, to Radiochemical Centre Limited, The. Technetium-99M generators. 3,827,986, Cl. 252-301.10r.
Charmeil, Pierre; and DeBieuvre, Michel, to S.A.R.L."Constructions Isothermiques Bontami". Regulator for centralized refrigerating. 3,828,152, Cl. 200-83.000.
Chase, Bernard S.; Frederick, Raymond H.; and Gorglione, Victor T. Stationary backlighted billboard, billboard display panel and method of making a billboard display panel. 3,827,169, Cl. 40-125.00k.
Chemical Generators, Inc.: *See—*
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Chen, Pictiaw, to University of California, The Regents of the. Orange picker. 3,827,221, Cl. 56-328.00r.
Chevallier, Pierre, to Etablissements Genoud & Cie, Societe Anonyme. Automatic cigarette lighter. 3,827,852, Cl. 431-254.000.
Chevallier, Pierre, to Etablissements Genoud & Cie, Societe Anonyme. Cigarette lighter with pivoting control member. 3,827,853, Cl. 431-255.000.
Chevron Research Company: *See—*
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Reed, Marion G., 3,827,495.
Reed, Marion G., 3,827,500.
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Chia, Enrique C., to Southwire Company. Grain refinement of aluminum alloy castings. 3,827,881, Cl. 75-138.000.
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Ching, Pai Ping. Ambient light warning device. 3,828,311, Cl. 340-84.000.
Cho, Boong Y., to Industrial Nucleonics Corporation. Method and apparatus for measuring the opacity of sheet material in which the transmittance signal is compensated for the reflectivity of the material. 3,827,808, Cl. 356-199.000.
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Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., to Grace, W. R., & Co. Composition for producing wrinkle-free permanently pressed cellulosic textile materials. 3,827,994, Cl. 260-29.40r.
Cieniawa, Edward A.; and Palecek, Vincent J., to Bunker Ramo Corporation. Electrical connector and mounting means. 3,828,302, Cl. 339-91.00r.
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Clarke, Ternece James Leonard; Quarmby, Robert Charles; and Matts, George Arthur, to British United Shoe Machinery Co., Ltd., The. Manufacture of springs. 3,827,464, Cl. 140-103.000.
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Clement, John H. Signaling device for rural mailbox. 3,827,627, Cl. 232-35.000.

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Close, David E., to Transportation Technology, Inc. Linear motor acceleration control system. 3,828,236, Cl. 318-561.000.

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Coates, Robert N.: *See—*
Bennett, Charles D.; Coates, Peter M.; and Coates, Robert N., 3,828,318.

Cockrum, Raymond C. Working barrel rack. 3,827,572, Cl. 211-81.000.

Codina, Jorge G., to Combined Sciences Corporation. Optical minitor. 3,827,810, Cl. 356-201.000.

Codrino, Giuseppe. Terminals of electrical equipment and ribbon-like leads. 3,828,300, Cl. 339-74.00r.

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Colin, Dennis P., to ARP Instruments, Inc. Control circuitry for electronic musical instrument. 3,828,110, Cl. 84-1.010.

Collins, Joseph M. Golf ball warming oven. 3,828,165, Cl. 219-521.000.

Coltrin, Robert Peyton. Method of swage nail fastening. 3,827,131, Cl. 29-432.100.

Columbia Manufacturing Corporation: *See—*
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Concrete Industries (Monier) Limited: *See—*
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Connell, Lehman J.; and Durkee, Lyle H., to General Motors Corporation. 3,827,710, Cl. 280-87.00r.

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Continental Oil Company: *See—*
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Converse, David B. Guided tool. 3,827,822, Cl. 408-110.000.

Conveyor Line Products, Inc.: *See—*
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Cookes, Austin C., to Clark Equipment Company. Adjustable seat for an industrial truck. 3,827,747, Cl. 296-65.00r.

Copeland, William Leo. Mod-wall concrete. 3,827,895, Cl. 106-99.000.

Coppel, Georges, to Constructions Mills. K. Automatic type of load-carrying trolley and its applications to storage installations on one or more levels. 3,827,365, Cl. 104-88.000.

Cornier, Sally P.; and Wymore, Charles E., to Dow Chemical Company, The. Process for preparing cyclic oligomers of N-substituted aziridines. 3,828,023, Cl. 260-239.0bc.

Corning Glass Works: *See—*
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Cotton, Incorporated: *See—*
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Couture, Romeo E.: *See—*
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Coval, Arthur B. Articulated haulage vehicle. 3,827,721, Cl. 280-400.000.

Craig, Frank G., Sr., to Roblin Industries, Inc. Demountable shelf edge fence. 3,827,574, Cl. 211-184.000.

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Crawford, Wilbur B.; Young, Earl W.; and Happy, Raymond, to General Motors Corporation. Cam controlled surface forming machine. 3,827,191, Cl. 51-101.00r.

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Croft, Harry E. Shopper's kit. 3,827,551, Cl. 206-214.000.

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Cross, Laurence Allan, Jr., to Randomatic Data Systems, Inc. Card shift mechanism for random access filing systems. 3,827,553, Cl. 209-80.500.

Crossfield, Roger John, to Fiber Industries, Inc. Process for steam jet texturing a coated yarn. 3,827,114, Cl. 28-75.0wt.

Crossland, Ronald K., to Shell Oil Company. Stable elastomeric polymer-oil compositions. 3,827,999, Cl. 260-33.6aq.

Crowe, Curtis W., to Dow Chemical Company, The. Fluid loss additive. 3,827,498, Cl. 166-282.000.

Crowe, Talmadge L., to Baker Oil Tools, Inc. Anti-friction ball valve operating means. 3,827,494, Cl. 166-224.000.

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Cunningham, Arthur L.; Poovathunkal, Cyriac C.; and Yapp, William J., to Sherwin-Williams Company, The. Liquid polyol compositions. 3,827,993, Cl. 260-22.0ep.

Curran, Roger J., to Remington Arms Company Inc. Water-soluble shotshell wad and method of manufacturing same. 3,827,363, Cl. 102-95.000.

Curry, Paul F. Wheel chair. 3,827,718, Cl. 280-242.0wc.

Cusick, John H.; Brown, Alvin E.; Hamamoto, Al S.; and Bellin, Jack L. S., to United States of America, Navy, mesne. Ultrasonic bond monitor. 3,827,619, Cl. 228-1.000.

Cuthbertson, William C. Tiltable tub assembly for bathing invalids. 3,827,087, Cl. 4-178.000.

Czernik, Daniel E., to Felt Products Mfg. Co. Roadway joint seal assembly and end dam section. 3,827,817, Cl. 404-67.000.

D-TEK: *See—*
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Dahlin, Erik B.; and Hill, Robert C., to Measurex Corporation. Detector assembly. 3,828,190, Cl. 250-308.000.

Dahly, Harold W. Adjustable chin rest for smokers pipes. 3,827,445, Cl. 131-186.000.

Daido Metal Company: *See—*
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Daigle, Henri. Rural mailbox. 3,827,626, Cl. 232-17.000.

Dailey, Clifford P. Means for attaching pencils to templates. 3,827,152, Cl. 33-174.00b.

Daimler-Benz Aktiengesellschaft: *See—*
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Daniel, Michael R., to Westinghouse Electric Corporation. Method for improving semiconductor surface wave transducer efficiency. 3,828,283, Cl. 333-30.00r.

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Darm, William J. Grease-collecting heat exchanger installation. 3,827,343, Cl. 98-115.000.

Datron Systems, Inc.: *See—*
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Daughenbaugh, Raymond. Underwater demolition device. 3,827,359, Cl. 102-1.00r.

Dauksys, Richard J. Stabilization of polymers of unsaturated hydrocarbons. 3,828,004, Cl. 260-45.75r.

Dauten S.A.: *See—*

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Davis, Amos F. Log cutting apparatus for cutting logs into selected lengths. 3,827,327, Cl. 83-522.000.
Davis, Burns; Fagerburg, David R.; and Kibler, Charles J., to Eastman Kodak Company. Water-dissipatable polyesteramides. 3,828,010, Cl. 260-75.00n.
Davis, Thomas S. Marking float. 3,827,093, Cl. 9-8.00r.
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Day, John R. Illuminated fish lure. 3,828,177, Cl. 240-6.40f.
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De Beauclair, Wilfried: *See—*
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De Marco, Franco; and Manghi, Carlo A., to Societa Italiana Telecomunicazioni Siemens S.p.A. System for detecting dial-generated and pushbutton generated selection pulses. 3,828,141, Cl. 179-84.0vf.
De Marinis, Robert M.; and Hoover, John R. E., to Smithkline Corporation. Trifluoromethylmercaptoacetamidocephalosporins. 3,828,037, Cl. 260-243.00c.
De Sandre, Giovanni; Subrizi, Angelo; and Bretti, Franco, to Olivetti, Ing., C., & C., S.p.A. Electronic computers. 3,828,322, Cl. 340-172.500.
De Vault, Robert T.; and Maloof, Ralph, to Davidson, Paul, mesne. Hydrojet propulsion drive. 3,827,390, Cl. 115-12.00r.
De Vries, Douwe; and Gilmore, Samuel E., to Stewart, C. Jim, & Stevenson, Inc. Locking system for a blowout preventer. 3,827,668, Cl. 251-1.000.
De Walker, Roger D.; and Howe, Blair E., to California Injection Molding Co., Inc. Apparatus for loading inserts onto insert receiving seats of a mold. 3,827,856, Cl. 425-126.00r.
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Demi, Roy C., to Robertshaw Controls Company. Fuel control device. 3,827,630, Cl. 236-99.000.
Denham, Albert W.; and Redfern, Brian A. W., to British Railways Board. Methods of producing a metal and carbon fibre composite. 3,827,129, Cl. 29-419.000.
Denton, William T.: *See—*
Hammond, Philip D.; Scott, John A.; Clarke, William M.; and Denton, William T., 3,828,089.
Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Amino derivatives of pyrazolopyridine ketones. 3,828,057, Cl. 260-296.00h.
Dermond, Hartley P. Earth and road roller. 3,827,819, Cl. 404-126.000.
Derry, Juanita. Portable picnic cart. 3,827,708, Cl. 280-36.00r.
Dethloff, Jurgen; and De Beauclair, Wilfried. Manual input device for data-processing system and the like. 3,828,128, Cl. 178-18.000.
Dettling, Ronald F.; Bush, John E.; and Zulkowski, Thomas R., to United States of America, Navy. Protective weapon for attack aircraft. 3,827,656, Cl. 244-3.160.
Deubel, Reinhold: *See—*
Schwerin, Siegfried; Deubel, Reinhold; and Thilenius, Thilo, 3,827,902.
Deussen, Werner. Childproof container closure. 3,827,592, Cl. 215-9.000.
Deutsche Gold-und Silber-Scheidean-stalt vormals Roessler: *See—*
Westlinning, Hermann; Schwarze, Werner; and Fleischhauer, Horst, 3,828,002.
DeVita, Raymond A.; Dorosz, Adolph S.; and Scaletti, Henry M. Jr., to USM Corporation. Method and apparatus for forming normally appearing stitches. 3,827,382, Cl. 112-262.000.
Diagnostic Instruments, Inc.: *See—*
Roth, Walter, 3,827,905.
Diamond Crystal Salt Company: *See—*
Leverenz, Melvin E.; and Leverenz, Kenneth H., 3,827,450.
Diamond International Corporation: *See—*
Knickerbocker, Michael Gene, 3,827,605.
Knickerbocker, Michael Gene, 3,827,606.
Diamond Power Specialty Corporation: *See—*
Adiutori, Eugene F., 3,827,102.
Dickey-John Corporation: *See—*
Knepler, John T., 3,828,173.
Dicus, Allen B., to DKL Industries, Inc. Combination camera and developer tank. 3,828,360, Cl. 354-89.000.
Diepers, Heinrich; Schmidt, Otto; and Kress, Reinhard, to Siemens Aktiengesellschaft. Method for anodic oxidation of the interior surface of a hollow niobium body provided with at least one opening. 3,827,950, Cl. 204-26.000.
Dietl, Hans K., to Eastman Kodak Company. Synthesis of 1,5-dimethyl-6, 8-dioxabicyclo(3.2.1)octane. 3,828,075, Cl. 260-340.900.
Dietrich, Karl-Heinz: *See—*
Pfeifer, Josef; Hofmann, Wilfried; and Dietrich, Karl-Heinz, 3,827,802.
Dilby, Clell A., Jr., to United States of America, Navy. Device for changing pitch of an audio signal to improve intelligibility. 3,828,134, Cl. 179-1.0sa.
Diliberto, Joseph F. Tooth extraction vibrator. 3,827,148, Cl. 32-61.000.
Dimitracopoulos, Panayotis C. Audiovisual disc projector. 3,827,794, Cl. 353-18.000.
Dinerman, Bernard B.; and Schroeder, Franklin T., to Burroughs Corporation. Shared memory addressor. 3,828,320, Cl. 340-172.500.
Dinning, Robert W., to Macco Oil Tool Company, Inc. Apparatus for selectively receiving and releasing well tools. 3,827,491, Cl. 166-224.000.
DKL Industries, Inc.: *See—*
Dicus, Allen B., 3,828,360.
Doerhoefer, Guenther, to Ciba-Geigy Corporation. [4-(5,10-Dihydro-4H-benzo]5,6[cyclohepta]1,2-b[thien-4-yl)-1-piperazinyl-alkyl]-3-alkyl-2-imidazolidinones. 3,828,046, Cl. 260-268.0tr.
Dogliotti, Amilcare, to Ferrero, P., & C., S.p.A. Carton closure device. 3,827,624, Cl. 229-45.000.
Dolby Laboratories Inc.: *See—*
Dolby, Ray Milton, 3,828,280.
Dolby, Ray Milton, to Dolby Laboratories Inc. Compressors, expanders and noise reduction systems. 3,828,280, Cl. 333-14.000.
Domenico, Amadeo: *See—*
Keislich, Klaus; Kerb, Ulrich; Mengel, Klaus; and Domenico, Amadeo, 3,828,083.
Domtar Limited: *See—*
Hamel, Richard, 3,827,281.
Donahue, Edward T.: *See—*
Kenney, Harold E.; and Donahue, Edward T., 3,828,086.
Donaldson Company, Inc.: *See—*
Firth, Robert L., 3,827,558.
Doniat, Denis; Porta, Augusto; and Mosetti, Jacques, to Battelle Memorial Institute. Method for purifying ionically conducting solutions. 3,827,961, Cl. 204-180.00r.
Doolittle, Donald B., to All American Industries, Inc. Aircraft arresting apparatus. 3,827,660, Cl. 244-110.00c.
Doomernik, Cornelis, to Wed. Joh. Verhulst en Zonen B.V. Air conditioning system. 3,827,257, Cl. 62-418.000.
Dorman, Linneaus C., to Dow Chemical Company, The. Nα-[6-(Carbobenzyloxyamino) hexanoyl]Nε -(substituted carbobenzyloxy)-L-lysine compounds. 3,828,018, Cl. 260-112.500.
Dorosz, Adolph S.: *See—*
DeVita, Raymond A.; Dorosz, Adolph S.; and Scaletti, Henry M. Jr., 3,827,382.
Douglas, Bobby L., to Dresser Industries, Inc. Check valve cage apparatus and method of making same. 3,827,122, Cl. 29-157.10r.
Douglas, David. Method of joining the walls of a double-walled vessel. 3,827,925, Cl. 156-73.000.
Douglas, Harley W.; and Graydon, Kenneth. Ratchet screw driver. 3,827,470, Cl. 145-76.000.
Douglass, Richard W., to Norton Company. Fibered metal powders. 3,827,865, Cl. 29-192.000.
Douley, Richard A. Manipulating mechanism. 3,827,309, Cl. 74-110.000.
Dow Chemical Company, The: *See—*
Brasie, William C., 3,827,676.
Cornier, Sally P.; and Wymore, Charles E., 3,828,023.
Crowe, Curtis W., 3,827,498.
Dorman, Linneaus C., 3,828,018.
Hickner, Richard A.; and Goss, Edward W., 3,828,100.
Lee, Walter Joe, 3,827,455.
Martin, John; and Johnson, Francis, 3,828,064.
Thomas, Robert J., 3,828,006.
Dowty Fuel Systems Limited: *See—*
Rimmer, Ronald, 3,827,460.
Drabowitch, Serge; and Daveau, Bernard, to Thomson-CSF. Antenna system employing toroidal reflectors. 3,828,352, Cl. 343-837.000.
Drayer, T. Gary, to International Harvester Company. Conical transition. 3,827,443, Cl. 130-27.00t.
Dreher, Edward J. Tiltable form for preformed brick wall. 3,827,666, Cl. 249-18.000.
Dresser Industries, Inc.: *See—*
Douglas, Bobby L., 3,827,122.
Drollinger, Ralph A.: *See—*
Mead, Mitchell F.; and Drollinger, Ralph A., 3,827,612.

Du Pont de Nemours, E. I., and Company: *See—*
Beresniewicz, Aleksander, 3,827,996.
Duggins, Ray B.; Miller, Henry C.; and Vassiliou, Eustachios, 3,827,933.
Green, Ralph V., 3,827,987.
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Dubrovin, Jury Mikhailovich: *See—*
Schedrovitsky, Savely Solomonovich; Mash, Dmitry Matveevich; Golovko, Zoya Ivanovna; Goncharevich, Leonid Fomich; Lebedev, Alexei Pavlovich; Dubrovin, Jury Mikhailovich; and Suut, Nikolai Karlovich, 3,828,339.

Duconge, Claude: *See—*
Laurent, Jean; and Duconge, Claude, 3,827,814.

Dudley, Leslie Peter, to Dudley Optical Laboratories, Inc. Steroscopic microscopy. 3,827,793, Cl. 353-8.000.

Dudley Optical Laboratories, Inc.: *See—*
Dudley, Leslie Peter, 3,827,793.

Duggins, Ray B.; Miller, Henry C.; and Vassiliou, Eustachios, to Du Pont de Nemours, E. I., and Company. Filled polymethyl methacrylate article and a process for its manufacture. 3,827,933, Cl. 161-176.000.

Dumas, Christ J.; and Simovits, Stephen S., Jr., to American Plasticraft Company. Voltage surge dissipator. 3,828,219, Cl. 313-325.000.

Dumont, Philippe, to Carriere et Fours a Chaux Dumont-Wantier. Process of obtaining a dry and powdery mixture of hydrated lime and plaster. 3,827,897, Cl. 106-110.000.

Dunlop Limited: *See—*
Mitchell, William E., 3,827,756.

Durkee, Lyle H.: *See—*
Connell, Lehman J.; and Durkee, Lyle H., 3,827,710.

Durth, Wilfried: *See—*
Tropp, Karl; Durth, Wilfried; and Jakob, Heinrich, 3,827,346.

Dushane, Raymond N., Jr., to Columbia Manufacturing Corporation. Latch assembly. 3,827,738, Cl. 292-128.000.

Dussan V, Benicio I.: *See—*
Weiner, Robert I.; Hoge, Henri H.; and Dussan V, Benicio I., 3,827,477.

Dycus, Dale W.; Malmberg, Earl W.; and Wilchester, Harry L., to Sun Oil Company (Delaware). Oil recovery process using aqueous surfactant compositions. 3,827,497, Cl. 166-274.000.

Dzus Fastener Co., Inc.: *See—*
Dzus, Theodore, Sr.; and Dzus, Julius Frank, 3,827,110.

Dzus, Julius Frank: *See—*
Dzus, Theodore, Sr.; and Dzus, Julius Frank, 3,827,110.

Dzus, Theodore, Sr.; and Dzus, Julius Frank, to Dzus Fastener Co., Inc. Rigid fastener. 3,827,110, Cl. 24-221.00a.

Eastman Kodak Company: *See—*
Anderson, Robert I., 3,827,617.
Davis, Burns; Fagerburg, David R.; and Kibler, Charles J., 3,828,010.
Dietl, Hans K., 3,828,075.
Gnage, Oliver W.; and Enfonde, John J., 3,827,588.
Henion, Richard S.; and Maggiulli, Cataldo A., 3,828,032.
Nielsen, Leroy C., 3,827,646.
Schickler, Edward R., 3,828,172.
Terwilliger, James P.; Gingello, Anthony D.; and Tinney, John R., 3,827,888.

Eaton Corporation: *See—*
Meacham, George B. K., 3,827,413.
Mueller, James F., 3,827,520.
O'Callaghan, Gerald F.; and Woelz, Donald D., 3,828,168.
Roob, Elwood I., 3,827,451.

Eaves, Robert B. Overhead projector apparatus. 3,827,797, Cl. 353-122.000.

Ebauches Bettlach S.A.: *See—*
Bachmann, Peter, 3,827,235.

Ebersberger, Johann, to Siemens Aktiengesellschaft. Self balancing rotary anode arrangement for X-ray tubes. 3,828,217, Cl. 313-149.000.

Ebisch, Martin, to Siemens Aktiengesellschaft. Circuit for accurately controlling the amplitude of a transmitter. 3,828,270, Cl. 330-130.000.

Eckrich, Peter & Sons, Inc.: *See—*
Flesch, Keith E., 3,827,319.

Ecology Recycling Inc.: *See—*
Rosenow, William L., 3,827,351.

Eddy Match Company, Limited: *See—*
Smith, Jack, 3,827,185.

Edenfield, Neal M. Horse saddle stirrup setter. 3,827,215, Cl. 54-1.000.

Edmond, Tibor O., to Continental Oil Company. Anchoring and pressuring apparatus for a drill. 3,827,512, Cl. 175-94.000.

Edwards, John A.: *See—*
Marx, Michael; and Edwards, John A., 3,828,034.

Edwards, Miles Lowell. Fluid pump control system. 3,827,828, Cl. 417-43.000.

Ehnot, Donald J., to Air Products and Chemicals, Inc. Deflashing apparatus. 3,827,186, Cl. 51-7.000.

Eidelberg, Jonah; Mooney, Thomas; and Brett, John J. Liquid-tight swivel coupler for electrical conduit. 3,828,117, Cl. 174-84.00s.

Eiselstein, Herbert Louis; and Hosier, James Crombie, to International Nickel Company, Inc., The. Sheathed electric heater elements. 3,828,296, Cl. 338-234.000.

Electrometallurgical Sales, Division of the Gilbert Tramer Co.: *See—*
Callahan, Norman F., 3,827,963.

Electroprint, Inc.: *See—*
Blake, David Edward, 3,827,855.

Elliott, James Madison. Finishing method. 3,827,208, Cl. 52-741.000.

Ellis, Colin Ronald George: *See—*
Needham, James Christopher; Ellis, Colin Ronald George; and Lilly, Rodger Hedley, 3,827,138.

Eltro GmbH & Co.: *See—*
Friedl, Wolfgang; and Aberle, Claus, 3,828,264.

Em D'Hooge N.V., naamloze vennootschap: *See—*
Van Helleputte, Roger Joseph Victor, 3,827,182.

Emhart Corporation: *See—*
MacMaster, Malcolm D.; and Morris, Herbert R., 3,827,254.

Endersz, Gyorgy Geza, to Telefonaktiebolaget LM Ericsson. Variable wave-guide impedance for measurement and claibration of an active microwave element. 3,828,282, Cl. 333-22.00r.

Endicott Johnson Corporation: *See—*
Jones, James P., 3,827,167.

Endress, James W.: *See—*
Kerschbaumer, Hans Gerhard; and Endress, James W., 3,827,250.

Enfonde, John J.: *See—*
Gnage, Oliver W.; and Enfonde, John J., 3,827,588.

Engelhard Minerals & Chemicals Corporation: *See—*
Highberg, Carle W.; and Roesch, George R., 3,827,189.
Mallary, Miller B., 3,827,556.

English, Myrle H.; Goodstal, Laurence; Leek, Wayne E.; Sanzo, Robert J.; Turner, Robert L.; Workman, Clark B.; and Yetter, Edward W., to Remington Arms Company, Inc. Numerically controlled engraving machine system. 3,827,334, Cl. 90-34.000.

Enkner, Bernhard, to Vereinigte Osterreichische Eisen-und Stahlwerke Alpin Montan Aktiengesellschaft. Scrap charging machine for converters. 3,827,583, Cl. 214-18.0sc.

Enoguchi, Yuji: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,827,800.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,827,801.

Entreprise de Recherches d'Activites Petrolieres Elf: *See—*
Trocqueme, Fancois Jean, 3,828,262.

Entwisle, John Hubert: *See—*
Cairns, John Francis; Colchester, John Edward; and Entwisle, John Hubert, 3,828,058.

Eprad Incorporated: *See—*
Boudouris, Angelo; and Gray, Geoffrey T., 3,827,782.

Epstein, Irving. Apparatus for measuring powder. 3,827,513, Cl. 177-121.000.

Epstein, Irving. Apparatus for measuring powder. 38,271,513, Cl. 177-121.000.

Erasmus Universiteit: *See—*
Bom, Nicolaas, 3,827,115.

Erchoff, Jean-Paul, to GAF Corporation. Slide tray indexing mechanism for slide projectors and the like. 3,827,796, Cl. 353-116.000.

Ercoli, Alberto; Gardi, Rinaldo; and Vitali, Romano, to Warner-Lambert Company. Steroidyl-estratrienes. 3,828,081, Cl. 260-397.200.

Erdmann, Hans, to Waldes Kohinoor, Inc. Dispensers for dispensing bowed open springs retaining rings provided with locking prongs. 3,827,598, Cl. 221-312.000.

Erma, Eero Antero; Fredin, Stig Bertil Arthur; Lindh, Karl Gosta; and Timgren, Leo Anders. Method for accomplishing a high driving force at a combustion gas driven impact device and an impact device for carrying out of said method. 3,827,410, Cl. 123-46.00.

Eseke, James Richard; Morsell, Arthur Lee; Muntz, Eric Phillip; and Welkowsky, Murray Samuel, to Xonics, Inc. Gas handling system for electronradiography imaging chamber. 3,828,191, Cl. 250-315.000.

Esmond, William G. Filtering device. 3,827,562, Cl. 210-304.000.

Esquire, Inc.: *See—*
McFarlin, Ralph M., 3,827,735.

Etablissements Genoud & Cie, Societe Anonyme: *See—*
Chevallier, Pierre, 3,827,852.
Chevallier, Pierre, 3,827,853.

Etablissements Carpano & Pons S.A.: *See—*
Payen, Jean Noel, 3,827,649.

Evans, George, Corporation, The: *See—*
Benson, James L.; and Sellmann, William, 3,827,651.

Evans Products Company: *See—*
Krokos, Raymond M., 3,827,662.

Evans, Robert E.: *See—*
NOrton, Charles J.; Falk, David O.; and Evans, Robert E., 3,827,499.

EVI: *See—*
Gates, Donald C., 3,827,310.

Ex-Cell-O Corporation: *See—*
Halvorsen, Robert M., 3,827,638.
Miller, Robert L.; and Fisset, Louis M., 3,827,280.

Eyelet Specialty Company: *See—*
Schultz, Robert S., 3,827,212.
Schultz, Robert S., 3,827,607.

Fabio, Paul Frank: *See—*
Tomcufcik, Andrew Stephen; Izzo, Patrick Thomas; and Fabio, Paul Frank, 3,828,041.

Fabricas Lucia Antonio Betere, S.A.: *See—*
Betere, Antonio, 3,827,112.

Fabricius, John H.; and Maher, John P., to Sprague Electric Company. Variable electronic component switch. 3,828,154, Cl. 200-153.01b.

Fadden, Michael F. Orthopedic brace. 3,827,430, Cl. 128-80.00e.

Faden, Carl. Means for lowering the mast on sailboats. 3,827,386, Cl. 114-91.000.

Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., to Monroe Belgium N.V. Shock absorber and piston valve structure. 3,827,539, Cl. 188-322.000.

Fagan, Donald Frederick; and Hale, Rodney Barker, to Movalarm Limited. Television systems. 3,828,125, Cl. 178-6.800.

Fagan, Franklin G., Jr., to Mallory, P. R., & Co., Inc. Low temperature mercury oxide-zinc battery. 3,827,916, Cl. 136-20.000.

Fagerburg, David R.: *See—*
Davis, Burns; Fagerburg, David R.; and Kibler, Charles J., 3,828,010.

Falk, David O.: *See—*
NOrton, Charles J.; Falk, David O.; and Evans, Robert E., 3,827,499.

False Creek Industries Ltd.: *See—*
Gregory, Gerald H.; and Benedict, Donald W., 3,827,471.

Faltag AG.: *See—*
Voegeli, Ernst, 3,827,196.

Fantoni, Marco, to Tecno S.p.A. Mobili e forniture per arredamento. Support for the seat of a chair. 3,827,750, Cl. 297-445.000.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Wieden, Horst; Nogaj, Alfred; and Marzolph, Herbert, 3,828,014.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Junker, Peter; Ribka, Joachim; and Kunstmann, Walter, 3,828,019.
Schwerin, Siegfried; Deubel, Reinhold; and Thilenius, Thilo, 3,827,902.
Spietschka, Ernst; and Landler, Josef, 3,828,072.

Farmer, John, to Ward Foods, Inc. Apparatus for extracting juice from sugar cane. 3,827,909, Cl. 127-3.000.

Farnsworth, Robert P., to Hughes Aircraft Company. Sensitive pulse threshold detector. 3,828,204, Cl. 307-235.00r.

Faroudja, Yves C.: *See—*
Bruck, George; Faroudja, Yves C.; and Smaller, Philip, 3,828,129.

Farrissey, William J., Jr.: *See—*
Abbate, Franklin W.; and Farrissey, William J., Jr., 3,828,047.

Faupel, Werner; and Zibold, Karl, to Bosch, Robert, G.m.b.H. Means for reducing fuel delivery of fuel injection pumps in the low RPM range. 3,827,832, Cl. 417-289.000.

Feather, Alec. Swim fin. 3,827,095, Cl. 9-307.000.

Fechalos, William A.: *See—*
Bradbery, Jack L.; Andersen, Todd G.; and Fechalos, William A., 3,828,314.

Federal Paper Board Company, Inc.: *See—*
Arneson, Edwin L., 3,827,550.
Arneson, Edwin L., 3,827,623.
Zavatone, James; and Myers, John H., 3,827,211.

Fehnel, Richard Byrd, to Burroughs Corporation. Multi-position character display panel. 3,828,218, Cl. 313-177.000.

Feintuch, Martin William, to Bendix Corporation, The. Control system monitoring apparatus having minimal nuisance alarm characteristics. 3,827,659, Cl. 244-77.00m.

Feit, Peter Werner; and Nielsen, Ole Bent Tvarmose, to Lovens Kemiske Fabrik Produktionsaktieselskab. Certain 1,2-benzisothiazole-1,1-dioxides. 3,828,059, Cl. 260-301.000.

Fejes, Peter, to Asea Atom AB. Surface condensor. 3,827,479, Cl. 165-101.000.

Felt Products Mfg. Co.: *See—*
Czernik, Daniel E., 3,827,817.

Felzer, Bertold, to General Motors Corporation. Energy absorbing construction for front-engined motor vehicles. 3,827,525, Cl. 180-82.00r.

Fenster, Abraham N.: *See—*
Price, Alson K.; and Fenster, Abraham N., 3,828,085.

Ferd Ruesch Maschinenfabrik, Firma: *See—*
Budai, Mikulas, 3,827,358.

Ferdelman, Lawrence Joseph; Peters, Joseph A.; and Peterson, Willard Elvin, to Wunder-Klein—Donohue Company. Process and apparatus for handling bulk building materials at construction sites. 3,827,744, Cl. 294-67.00e.

Fernlund, Lars Martin Ingemar, to SKF Industrial Trading and Development Company B.V. Roller bearing. 3,827,771, Cl. 308-212.000.

Ferrand, Jan, to Societe C. M. V. Lens guide arrangement and apparatus for grinding and polishing toric lenses. 3,827,192, Cl. 51-124.100.

Ferrari, Giorgio: *See—*
Canonica, Luigi; Danieli, Bruno; and Ferrari, Giorgio, 3,828,082.

Ferrero, P., & C., S.p.A.: *See—*
Dogliotti, Amilcare, 3,827,624.

Fiber Industries, Inc.: *See—*
Crossfield, Roger John, 3,827,114.

Fichter, Barry S.: *See—*
Parkison, Richard G.; and Fichter, Barry S., 3,827,636.

Fiddler, Theodore E.: *See—*
Adams, Arnold G., 3,828,155.

Fierro Esponja, S.A.: *See—*
Celada, Juan; Pena, Jesus Maria; MacKay, Patrick W.; de la Pena, Ramon; Martinez, Enrique Ramon; and de la Torre, Maria Teresa, 3,827,879.

Fikui, Kiyoshi: *See—*
Masaki, Mitsuo; Fikui, Kiyoshi; Kita, Jyun'Ichiro; and Uchida, Izuhiko, 3,828,028.

Finley, John W.; Hautala, Earl; and Walker, Charles E., to United States of America, Agriculture. Process for isolating proteins using liquid fluoro carbons and low density hydrocarbon solvents. 3,828,017, Cl. 260-112.00g.

Finn, Huck, Inc.: *See—*
Reynolds, Richard W., 3,827,595.

Finn, Joseph F.: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,827,994.

Firma PMD Entwicklungswerk fur Kunstsoff-Maschinen GmbH & Co. KG.: *See—*
Naumann, Wilhelm, 3,827,214.

Firma William Pry-Werke K.G.: *See—*
Glindmeyer, Friedrich; Limpens, Karl; and Hennenberg, Wilgelm, 3,827,463.

Firth Cleveland Fastinings Limited: *See—*
Strange, John, 3,827,815.

Firth, Robert L., to Donaldson Company, Inc. Fluid filter with bypass and condition indicator. 3,827,558, Cl. 210-90.000.

Fischer, Elias, to Stepan Chemical Company. Method of copper sulfide ore flotation. 3,827,557, Cl. 209-167.000.

Fischer, Karl: *See—*
Fischer, Karl; and Niehaus, Wolfgang (said Niehaus assor. to said), 3,828,164.

Fischer, Karl; and Niehaus, Wolfgang, said Niehaus assor. to said Fischer, Karl. Cooking device with an electrical temperature control. 3,828,164, Cl. 219-431.000.

Fischer, Robert Frederick; North, James Clayton; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Single wall domain propagation arrangement. 3,828,329, Cl. 340-174.0tf.

Fish, Robert C.: *See—*
Garland, Milton W.; and Fish, Robert C., 3,827,249.

Fisher, John M., to Goodrich, B. F., Company, The. Inflatable life raft escape slide. 3,827,094, Cl. 9-11.00a.

Fisset, Louis M.: *See—*
Miller, Robert L.; and Fisset, Louis M., 3,827,280.

Fixtures Manufacturing Corporation: *See—*
Johnson, Vern; and Snyder, Bobbie L., 3,827,749.

Flanagan, James Loton; Rabiner, Lawrence Richard; and Schafer, Ronald William, to Bell Telephone Laboratories, Incorporated. Speech synthesis by concatenation of formant encoded words. 3,828,132, Cl. 179-1.0sa.

Fleagle, Joseph E., to Wagner Electric Corporation. Wheel slip control system for automotive vehicles and the like. 3,827,760, Cl. 303-21.00p.

Fleischhauer, Horst: *See—*
Westlinning, Hermann; Schwarze, Werner; and Fleischhauer, Horst, 3,828,002.

Fleming, Gordon L.: *See—*
Grantham, Frederick W.; and Fleming, Gordon L., 3,827,611.

Flesch, Keith E., to Eckrich, Peter & Sons, Inc. Weight controlled slicing system. 3,827,319, Cl. 83-73.000.

Fletcher Sutcliffe Wild Limited: *See—*
Allen, Thomas Jeffrey, 3,827,755.

Flichman, Howard John: *See—*
Boggs, Luther Miles; Flichman, Howard John; and Hudson, James Alphus, Jr., 3,827,287.

Floessel, Carl Dieter; and Floessel, Klaus, to BBC Brown Boveri & Company Limited. Expansion joint for tubular insulating gas-filled enclosure for high-voltage conductor. 3,827,731, Cl. 285-187.000.

Floessel, Klaus: *See—*
Floessel, Carl Dieter; and Floessel, Klaus, 3,827,731.

Florus, Hans-Jorg; Grossner, Horst; and Osswald, Gerhard, to Daimler-Benz Aktiengesellschaft. Device for forming and processing velocity signals in vehicles. 3,828,198, Cl. 307-120.000.

Fluet, Francis A., to Westinghouse Electric Corporation. Apparatus for digital frequency multiplication. 3,828,169, Cl. 235-150.310.

Foerster, Rolf, to Foester, Bernhard, Firma. Wrist watch for digital indication. 3,827,231, Cl. 58-5.000.

Foester, Bernhard, Firma: *See—*
Foerster, Rolf, 3,827,231.

Fogelberg, Clement V.; and Kujava, John M., to Columbine Glass Company. Method and apparatus for coating glassware. 3,827,870, Cl. 65-60.000.

Fontaine, Louis: *See—*
Boschetti, Eugene; Molho, Darius; and Fontaine, Louis, 3,828,095.

Food-Quik Products, Inc.: *See—*
Forse, Harry D.; and Brown, Eldon W., 3,827,425.

Ford, Ethelyn. Microscope field marker. 3,827,777, Cl. 350-81.000.

Ford Motor Company: *See—*
Ader, William R.; and Krygowski, Richard P., 3,827,416.
Augustin, Eugene H.; and Long, William P., 3,827,872.
Burgett, James F.; and Vanderberg, Lawrence J., 3,828,254.
Caywood, James A.; McKeron, Charles E.; and Smith, Willard G., 3,827,336.
Howell, Carl A.; and Muller, George H., 3,827,741.

Forenade Fabriksverken Eskilstuna: *See—*
Lundquist, Ulf Rolfsson, 3,827,240.

Forse, Harry D.; and Brown, Eldon W., to Food-Quik Products, Inc. Cooking method and apparatus. 3,827,425, Cl. 126-369.000.

Forster, Daniel Emile; and Perrault, Jean, to International Standard Electric Corporation. PCM transmission system. 3,828,346, Cl. 340-347.0dd.

Foster, Christopher J., Inc.: *See—*
Foster, Christopher J., Sr.; and Foster, Christopher J., Jr., 3,827,682.

Foster, Christopher J., Jr.: *See—*
Foster, Christopher J., Sr.; and Foster, Christopher J., Jr., 3,827,682.

Foster, Christopher J., Sr.; and Foster, Christopher J., Jr., to Foster, Christopher J., Inc. Apparatus for rotation of plates to facilitate weldment. 3,827,682, Cl. 269-8.000.

Foster, Roy Vivian: *See—*
Bays, David Edmund; and Foster, Roy Vivian, 3,828,093.

Foster Wheeler Corporation: *See—*
Godino, Rino L.; and Morfit, Oliver, 3,827,944.

Foundation equipment Corporation, The: *See—*
MacKinnon, Alan G., 3,827,508.

Fouquet-Werke Frauz & Planck: *See—*
Kuhn, Falk; and Rombach, Friedrich, 3,827,615.

Fram Corporation: *See—*
Strick, Karl H., 3,827,826.

Franke, Friedrich H.: *See—*
Wenzel, Werner; Meraikib, Mohammed; Franke, Friedrich H.; and Konig, Horst, 3,827,878.

Franz, Edmund C., to Aluminum Company of America. Aluminum alloy architectural sheet product and method of producing. 3,827,952, Cl. 204-29.000.

Franzl, Gertrude K. Sanitary receptacle for pets. 3,827,401, Cl. 119-1.000.

Fredendall, Gordon Lyle: *See—*
Brandinger, Jay Jerome; Pritchard, Dalton Harold; Fredendall, Gordon Lyle; and Schroeder, Alfred Christian, 3,828,121.

Frederick, Ralph M. Method of and apparatus for repairing cardan type universal joints and protective boot. 3,827,121, Cl. 29-149.50b.

Frederick, Raymond H.: *See—*
Chase, Bernard S.; Frederick, Raymond H.; and Gorglione, Victor T., 3,827,169.

Fredin, Stig Bertil Arthur: *See—*
Erma, Eero Antero; Fredin, Stig Bertil Arthur; Lindh, Karl Gosta; and Timgren, Leo Anders, 3,827,410.

Freeston, W. Denney, Jr.: *See—*
Skelton, John; and Freeston, W. Denney, Jr., 3,827,904.

Freudenberg, Carl: *See—*
Mayer, Fritz, 3,827,120.

Frey, Walter C.; Mullender, Claude; and Reinhart, Norman E., to Goodrich, B. F., Company, The. Apparatus for making tires. 3,827,844, Cl. 425-142.000.

Frick Company: *See—*
Garland, Milton W.; and Fish, Robert C., 3,827,249.

Friedl, Wolfgang; and Aberle, Claus, to Eltro GmbH & Co. Device for optical amplification of a coherent signal. 3,828,264, Cl. 330-4.300.

Frietzsche, Gunther; and Krause, Peter, to Gillet, Heinrich, KG, Firma. Sound dampener for a flat engine mounted in the stern of a motor vehicle. 3,827,529, Cl. 181-33.00d.

Frigitronics of Conn., Inc.: *See—*
Stumpf, Joseph G.; and Andera, Joseph F., 3,827,436.

Frohberger, Paul-Ernst: *See—*
Widdig, Arno; Kuhle, Englebert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,828,094.

Fromageot, Pierre; Hung, Lam Thanh; and Morgat, Jean-Louis, to Commissariat A l'Energie Atomique. Method of preparation of tritium-labelled proteins. 3,828,102, Cl. 424-1.000.

Fuetsch, Alfred. Information device. 3,827,725, Cl. 281-8.000.

Fuji Electric Company Limited: *See—*
Yamaguchi, Taihei, 3,828,130.

Fuji Photo Film Co., Ltd.: *See—*
Ohkubo, Kinji; Masuda, Takao; and Noguchi, Junpei, 3,827,889.

Fujita, Koichiro, to Fujizoki Pharmaceutical Co., Ltd. Indirect hemagglutination test with simultaneous absorption of heterologous antibodies. 3,828,103, Cl. 424-12.000.

Fujitsu Limited: *See—*
Kobayashi, Kengo; and Manabe, Mitsuo, 3,828,238.
Nakayama, Norihiko; Osawa, Mitsuoki; Mizuko, Kiyoo; and Takahashi, Isao, 3,827,776.

Fujiwara, Takao: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,827,800.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,827,801.

Fujizoki Pharmaceutical Co., Ltd.: *See—*
Fujita, Koichiro, 3,828,103.

Fulks, John Arthur, to Rolls-Royce (1971) Limited. Welding machine. 3,828,156, Cl. 219-60.00a.

Fulton Projects, Inc.: *See—*
Fulton, William H., 3,827,388.

Fulton, William H., to Fulton Projects, Inc. Ship propulsion system. 3,827,388, Cl. 115-11.000.

Fuma, Toyozi; Takeuchi, Hideo; and Ikeda, Susumu, to Sintokogio, Ltd. Portable blasting device. 3,827,188, Cl. 51-9.000.

Fumi Photo Film Co., Ltd.: *See—*
Sato, Masamichi; and Tamai, Yasuo, 3,827,906.

Furst, Andor; Labler, Ludwig; Meier, Werner; Muller, Peter; Scott, John William; and Widmer, Erich, to Hoffman-La Roche Inc. Process for the preparation of des A-9 beta-steroids. 3,828,062, Cl. 260-307.00h.

Furuno Electric Company, Limited: *See—*
Kubota, Hiroshi, 3,827,150.

Furuta, Isao: *See—*
Ando, Noriaki; Yaeda, Yasuyuki; Furuta, Isao; and Sakata, Ryuichi, 3,827,991.

Fuse, Yuzo, to Sony Corporation. Color display tube with elongated phosphor dots and shadow mask apertures. 3,828,216, Cl. 313-403.000.

GAF Corporation: *See—*
Erchoff, Jean-Paul, 3,827,796.
Kaplan, Harry; and Papalos, John, 3,828,084.

Gainer, Gordon C.: *See—*
Luck, Russell M.; and Gainer, Gordon C., 3,828,000.

Galasso, Honore: *See—*
Chovet, Patrice; Rollin, Claude; Galasso, Honore; and Prost, Roger, 3,827,252.

Galt Equipment Ltd.: *See—*
Beaudet, Maurice, 3,827,478.

Gammel, Gregor; Pawlowski, Peter H.; Heidtmann, Uwe; and Jons, Mattias, to Brown, Boveri & Cie AG. Electrically insulated double tube heat pipe arrangement. 3,827,480, Cl. 165-105.000.

Gandilhon, Pierre: *See—*
Chabardes, Pierre; Gandilhon, Pierre; Grard, Charles; and Thiers, Michel, 3,828,092.

Gang-Nail Truss Company: *See—*
Ward, Robert L.; and Welch, Willie M., 3,827,325.

Gardi, Rinaldo: *See—*
Ercoli, Alberto; Gardi, Rinaldo; and Vitali, Romano, 3,828,081.

Gardner-Denver Company: *See—*
Loy, Fred W.; Harms, William J.; Wojahn, Charles W.; and Karasinski, Frederick, 3,827,465.

Garland, Milton W.; and Fish, Robert C., to Frick Company. Pressurized refrigerant recirculation system with control means. 3,827,249, Cl. 62-174.000.

Garnier, Marcel, to Pomagalski S.A. Braking device of a rescue apparatus for an overhead cable transport installation. 3,827,368, Cl. 104-112.000.

Garrett Corporation, The: *See—*
Appel, Gerhard H., 3,827,118.
Winiarz, Olgierd S., 3,827,702.

Garrett, Udell, Inc.; a division of Macco Oil Tools, Inc.: *See—*
Johnson, Joseph L.; and Guidry, Shelby L., 3,827,501.

Gass, Donald N.; and Prosser, David G., to Autotrol Corporation. Extended surface rotating biological contactor. 3,827,559, Cl. 210-150.000.

Gates, Donald C., to EVI. Transmission for wheeled vehicle. 3,827,310, Cl. 74-217.00s.

Gebr. Happich G.m.b.H.: *See—*
Herr, Gerhard; and Treber, Willy O., 3,827,748.

Geihl, Jerry L., to Watson, M. J.; d/b/a. Foldable and expandable modular shelter unit. 3,827,198, Cl. 52-69.000.

Geimer, Allan F. J. Pneumatic launcher and combination flare-ignitor. 3,827,360, Cl. 102-70.00f.

Gelman Instrument Company: *See—*
Bond, Kenneth Arthur George; Munro, Roger Cameron; and Hayler, Reginald, 3,827,286.

General Electric Company: *See—*
Guth, Lauren W., 3,827,730.
Kendall, Wyvil R., 3,827,579.
Warburton, Joe Allen; and Wilson, Henry Lewis, 3,828,119.
Webb, Robert F., 3,828,251.

General Motors Corporation: *See—*
Brooks, Frank W., 3,827,534.
Clark, David L., 3,827,788.
Connell, Lehman J.; and Durkee, Lyle H., 3,827,710.
Crawford, Wilbur B.; Young, Earl W.; and Happy, Raymond, 3,827,191.
Felzer, Bertold, 3,827,525.
Hoagland, Milton B.; and Wroblewski, Lawrence P., 3,827,269.
Kuhl, Bernard A.; and Mason, John B., 3,827,518.
Scheibe, Elias W., 3,827,836.
Williams, Dick H., 3,827,523.

General Signal Corporation: *See—*
Meyerhoefer, Carl E.; and Naples, Richard J., 3,827,677.

Geometric Data Corporation: *See—*
Miller, Melvin N.; Levine, Marshall S.; and Partin, Melvin E., 3,827,804.

Georgia Tech Research Institute: *See—*
Hungerford, Ernest Timmons, 3,828,307.

Gerber Products Company: *See—*
Nelson, Lloyd A., 3,828,193.

Gerry, Martin E. Programming timer with series connected switches. 3,828,200, Cl. 307-141.800.

Giglia, Robert Domenico; and Clasen, Richard Howard, to American Cyanamid Company. Simple, bonded graphite counter electrode for electrochromic devices. 3,827,784, Cl. 350-160.00p.

Gildersleeve, William E. Automatic metal protecting apparatus and method. 3,827,854, Cl. 432-19.000.

Gillemot, George W.; and Thompson, John T. Sealing grommet and plug for use with electrical cabling. 3,827,704, Cl. 277-209.000.

Gilleo, Kenneth B.; Jones, Edward S.; and Tajkowski, Edward G., to Allied Chemical Corporation. Sulfur substituted bis(polyfluoroalkoxyalkyl carboxylic acids) and derivatives thereof. 3,828,098, Cl. 260-481.00r.

Gillet, Heinrich, KG, Firma: *See*—
Frietzsche, Gunther; and Krause, Peter, 3,827,529.

Gilley, Charles W., deceased (by Gilley, Martha R.; executrix). Low profile coal mining apparatus. 3,827,754, Cl. 299-30.000.

Gilley, Martha R.: *See*—
Gilley, Charles W., deceased, 3,827,754.

Gilman, Frederick C., to Worthington Pump International, Inc. Stream filament mixer for pipe flow. 3,827,461, Cl. 138-39.000.

Gilman, Winthrop W. Machine for conditioning waste material for recycling. 3,827,347, Cl. 100-8.000.

Gilman, Winthrop W. Machine for conditioning waste material for recycling. 3,827,349, Cl. 100-98.00r.

Gilman, Winthrop W. Machine for conditioning waste material for recycling. 3,827,350, Cl. 100-52.000.

Gilmore, Samuel E.: *See*—
De Vries, Douwe; and Gilmore, Samuel E., 3,827,668.

Gilson, Robert E.: *See*—
Gilson, Warren E.; and Gilson, Robert E., 3,827,305.

Gilson, Warren E.: *See*—
D'Autry, Eric Marteau, 3,827,304.

Gilson, Warren E.; and Gilson, Robert E. Adjustable pipette. 3,827,305, Cl. 73-426.500.

Gingello, Anthony D.: *See*—
Terwilliger, James P.; Gingello, Anthony D.; and Tinney, John R., 3,827,888.

Giordano, Jean-Louis; and Lietard, Michel, to Regie Nationale des Usines Renault and Automobiles Peugeot. Combined braking and trim-correction devices for road vehicles. 3,827,764, Cl. 303-22.00r.

Girard, Peter F.: *See*—
Ryan, T. Claude; and Girard, Peter F., 3,827,661.

Girffin, Thomas S.; and Heywood, Kenneth W., to NS Industries, Inc. Calcium-aluminum-silicate extender pigment. 3,827,901, Cl. 106-306.000.

Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Aromatization process. 3,827,968, Cl. 208-49.000.

Givens, Wyatt W., to Mobil Oil Corporation. Logging technique for assaying for uranium in rock formations. 3,828,189, Cl. 250-253.000.

GKN Sankey Limited: *See*—
Wiggin, Anthony John, 3,827,466.

Glacier Metal Company Limited, The: *See*—
Lloyd, Kenneth; and Michael, Anthony Dennis, 3,827,882.

Gladys Miller: *See*—
Boller, George E.; and Renk, Richard J., 3,827,769.

Glass, Marvin, & Associates: *See*—
Barlow, Gordon A.; and Glass, Marvin I., 3,827,693.
Morrison, Howard J.; and Allen, Robert K., 3,827,692.

Glass, Marvin I.: *See*—
Barlow, Gordon A.; and Glass, Marvin I., 3,827,693.

Glathe, Hans-Peter: *See*—
Pattas, Konstantin; and Glathe, Hans-Peter, 3,827,837.

Glaxo Laboratories, Limited: *See*—
Phillipps, Gordon Hanley; and May, Peter John, 3,828,080.

Glindmeyer, Friedrich; Limpens, Karl; and Hennenberg, Wilgelm, to Firma William Pry-Werke K.G. Method of and apparatus for the production of a slide fastener. 3,827,463, Cl. 139-35.000.

Global Erectors, Inc.: *See*—
Lodjic, Carl L., 3,827,590.

Globe Manufacturing Company: *See*—
Rupprecht, Kenneth J., 3,827,261.

Gluncic, Berislav; and Kujundzic, Nedjeljko, to PLIVA, Pharmaceutical and Chemical Works. 5-(3,4,5-Trimethoxybenzyl)-barbituric acid. 3,828,044, Cl. 260-257.000.

Glynn, Donald C.; Chao, Andrew M.; and Carter, George E., to Bendix Corporation, The. Solid state compass follower. 3,828,261, Cl. 328-155.000.

Gnage, Oliver W.; and Enfonde, John J., to Eastman Kodak Company. Film cartridge opener. 3,827,588, Cl. 214-305.000.

Goda, Kazuhiro: *See*—
Kawano, Reijiro; Goda, Kazuhiro; Yamakawa, Hiroshi; and Otsuka, Masayoshi, 3,827,543.

Godino, Rino L.; and Morfit, Oliver, to Foster Wheeler Corporation. Wax crystal growth control in oil dewaxing plants. 3,827,944, Cl. 196-14.500.

Goettsch, Walter J., to Harris-Intertype Corporation. Adhesive system. 3,827,395, Cl. 118-5.000.

Gokey, Phillip E.: *See*—
Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., 3,827,378.

Goldberg, Edwin Allen, to RCA Corporation. Motor speed control system. 3,828,234, Cl. 318-314.000.

Goldfarb, William C., to Singer Company, The. Detector for self-clocking data with variable digit periods. 3,828,167, Cl. 235-61.11a.

Goldman, Jerome N.: *See*—
Goldman, Marvin A.; and Goldman, Jerome N., 3,828,176.

Goldman, Marvin A.; and Goldman, Jerome N., to Penn-Plax Plastics, Inc. Safe underwater lighting system for aquariums. 3,828,176, Cl. 240-2.01c.

Golovko, Zoya Ivanovna: *See*—
Schedrovitsky, Savely Solomonovich; Mash, Dmitry Matveevich; Golovko, Zoya Ivanovna; Goncharevich, Leonid Fomich; Lebedev, Alexei Pavlovich; Dubrovin, Jury Mikhailovich; and Suut, Nikolai Karlovich, 3,828,339.

Golze, Richard R.; and Kienle, Richard F., to Rockwell International Corporation. Structurally reinforced vehicle bumper. 3,827,740, Cl. 293-98.000.

Gomco Manufacturing Corporation: *See*—
Baumgarten, Carl B., 3,827,452.

Goncharevich, Leonid Fomich: *See*—
Schedrovitsky, Savely Solomonovich; Mash, Dmitry Matveevich; Golovko, Zoya Ivanovna; Goncharevich, Leonid Fomich; Lebedev, Alexei Pavlovich; Dubrovin, Jury Mikhailovich; and Suut, Nikolai Karlovich, 3,828,339.

Goodman, Mallard S. Detachable spiked shoe protective cover. 3,827,166, Cl. 36-2.5an.

Goodrich, B. F., Company, The: *See*—
Fisher, John M., 3,827,094.
Frey, Walter C.; Mullender, Claude; and Reinhart, Norman E., 3,827,844.

Goodstal, Laurence: *See*—
English, Myrle H.; Goodstal, Laurence; Leek, Wayne E.; Sanzo, Robert J.; Turner, Robert L.; Workman, Clark B.; and Yetter, Edward W., 3,827,334.

Goodwin, Charles M. Adjustable universal trouble light support. 3,828,181, Cl. 240-54.00a.

Gorglione, Victor T.: *See*—
Chase, Bernard S.; Frederick, Raymond H.; and Gorglione, Victor T., 3,827,169.

Goss, Edward W.: *See*—
Hickner, Richard A.; and Goss, Edward W., 3,828,100.

Gothberg, Yngve Roland: *See*—
Almstrom, Sten Hakan; and Gothberg, Yngve Roland, 3,827,241.

Gould Inc.: *See*—
Koeblitz, William E., 3,828,357.

Gourmandy, Raymond: *See*—
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Gower Manufacturing Co., Inc.: *See*—
Aughtry, Paul C. Jr., 3,827,377.

Grace, W. R., & Co.: *See*—
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,827,994.

Granchelli, Felix E., to Beecham Group Limited. Lower-alkyl-β-oxo-4-piperidine-N-benzoyl-proprionates. 3,828,053, Cl. 260-293.770.

Granda Corporation: *See*—
Arnold, Don C., 3,827,458.

Graniaris, Neophytos, to Struthers Patent Corporation. Ice crystals. 3,827,248, Cl. 62-123.000.

Grantham, Frederick W.: *See*—
Grantham, Frederick W.; and Fleming, Gordon L. (said Fleming assor. to said), 3,827,611.

Grantham, Frederick W.; and Fleming, Gordon L., said Fleming assor. to said Grantham, Frederick W. Folder with paper inserting means. 3,827,611, Cl. 223-37.000.

Graphica Precision Works Ltd.: *See*—
Mette, Klaus-Hermann, 3,828,317.

Grard, Charles: *See*—
Chabardes, Pierre; Gandilhon, Pierre; Grard, Charles; and Thiers, Michel, 3,828,092.

Grasser, Hans, to Siemens Aktiengesellschaft. X-ray diagnosing apparatus with a regulating device for the X-ray tube voltage. 3,828,194, Cl. 250-408.000.

Graulus, Marcel J. R.: *See*—
Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., 3,827,539.

Gray, Geoffrey T.: *See*—
Boudouris, Angelo; and Gray, Geoffrey T., 3,827,782.

Graydon, Kenneth: *See*—
Douglas, Harley W.; and Graydon, Kenneth, 3,827,470.

Green, Edward H. Mounting cover for pressurized fluid canister. 3,827,608, Cl. 222-402.160.

Green, Ralph V., to Du Pont de Nemours, E. I., and Company. Reforming process. 3,827,987, Cl. 252-373.000.

Greenberg, Sanford D., DT Liquidating Partnership: *See*—
Schiffman, Murray M., 3,828,361.

Greenerd Press Machine Company, Inc.: *See*—
LaFlamme, Philip A.; and Couture, Romeo E., 3,827,328.

Greenlee Bros. & Co.: *See*—
Seborg, Earnest Y.; and Wanke, Harold R., 3,827,683.

Greenwald, Harry; and Tuppo, Robert, to Kidd, Walter, & Company, Inc. Replaceable cam switching device for a coin controlled machine. 3,827,541, Cl. 194-1.001.

Greer, William S., 1/2 interest to McAlpin, Courtenay W. Electrode holder with power disconnect. 3,828,160, Cl. 219-141.000.

Greeson, Henry Edward, to British Steel Corporation and Borax Consolidated Limited. Inclusion of hydroboracite in additive composition and use thereof in steel refining. 3,827,880, Cl. 75-53.000.

Gref, Hans: *See*—
Jores, Willi; Gref, Hans; Lehmann, Helmut; Hoffacker, Franz; Luhrig, Hermann; and Kreit, Bernhardt, 3,827,647.

Gregoire, Francois: *See*—
Kneller, Klaus; Trub, Jean; and Gregoire, Francois, 3,827,842.

Gregory, Gerald H.; and Benedict, Donald W., to False Creek Industries Ltd. Flexible transporting containers. 3,827,471, Cl. 150-2.000.

Grenfell, Julian Pascoe, to Badalex Limited. Coating apparatus. 3,827,400, Cl. 118-421.000.

Grewe, Ferdinand: *See—*
Widdig, Arno; Kuhle, Englebert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,828,094.
Grewer, Rudolf; Hickmann, Herbert; and Welke, Wolfgang, to Thyssen Niederrhein AG Hutten-und Walzwerke. Charging apparatus for shaft furnace. 3,827,584, Cl. 214-36.000.
Griewahn, Carl O.: *See—*
Hickman, Stephen L.; and Griewahn, Carl O., 3,827,485.
Griffin, Dana K.; and Wilson, John R. Floor wax applicator with throw-away head. 3,827,100, Cl. 15-229.00a.
Griffin, Donald E., to Phillips Petroleum Company. Process apparatus control system for optimizing objective variable quality. 3,828,171, Cl. 235-151.120.
Grimes, Alton C. Trigonometry teaching device. 3,827,163, Cl. 35-34.000.
Grimmett, Earl S.; and Lamont, Philip E., to United States of America, Atomic Energy Commission. Method for the disposal of combustible and dilute aqueous wastes. 3,827,946, Cl. 203-10.000.
Griverus, Tor Lennart Bernt. Flow meter provided with a vortex chamber. 3,827,297, Cl. 73-194.00c.
Grob, Leonardus F. A.: *See—*
Terlecky, Boris S.; and Grob, Leonardus F. A., 3,827,375.
Grolitzer, Arthur J., to Vocon, Inc. Apparatus for intensifying radiation images. 3,828,186, Cl. 250-213.00r.
Grossman, David H.; and Plough, Charles T., to Multi-State Devices Ltd. Temperature compensating thermal relay. 3,828,292, Cl. 337-417.000.
Grossner, Horst: *See—*
Florus, Hans-Jorg; Grossner, Horst; and Osswald, Gerhard, 3,828,198.
Grotewold, Werner: *See—*
Kirsch, Klaus; and Grotewold, Werner, 3,828,247.
Grove, Marvin H., to M & J Valve Company. Flow control apparatus and method with leak detection. 3,827,285, Cl. 73-46.000.
Grow, William C. Turnover bed assembly. 3,827,089, Cl. 5-61.000.
Grube, Werner; Rutz, Karl-Friedrich; Jung, Berthold; and Schrage, Johannes, to Maschinenfabrik B. Maier KG. Wood comminuting apparatus. 3,827,643, Cl. 241-221.000.
Grundy, Reed H., to Westinghouse Air Brake Company. Fail-safe vehicle-carried anti-collision protection receiver. 3,828,225, Cl. 317-147.000.
Gruner, Wolf; Schabert, Hans-Peter; and Schubert, Franz, to Siemens Aktiengesellschaft. Apparatus for in-core instrumentation of pressurized water reactors. 3,827,935, Cl. 176-19.00r.
Gryaznov, Boris Vasilievich: *See—*
Samoilov, Sergei Mikhailovich; Ivanov, Vladimir Ivanovich; Zambrovskaya, Galina Vladimirovna; Tsvetkov, Oleg Nikolaevich; Monastyrsky, Viktor Nikolaevich; Bespalov, Evgeny Ivanovich; Gryaznov, Boris Vasilievich; and Molchanov, Boris Vladimirovich, 3,828,01.
GTE Automatic Electric Laboratories Incorporated: *See—*
Mila, Truman R., 3,828,315.
Padgett, Richard A., 3,828,135.
Wilber, John A.; Rice, Verner K.; and Buhrke, Rolfe E., 3,828,321.
GTE Information Systems Incorporated: *See—*
Schwartz, William F.; and Butler, Robert W. (said Schwartz assor. to), 3,828,344.
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Bennett, Kenneth R.; and Crownover, Joseph W., 3,827,142.
Guerette, Marcel, to Moody Matthew, Limited. Folding cart. 3,827,573, Cl. 211-149.000.
Guetens, Edward G.: *See—*
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Gurizzan, Luis; Gurizzan, Daniel Alberto; and Sayavedra, Modesto Albino. Automatic mechanism for the discharge of fluid in a pressurized system. 3,827,449, Cl. 137-68.000.
Guth, Lauren W., to General Electric Company. Waste food disposer mounting assembly. 3,827,730, Cl. 285-159.000.
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Hagler, Ray, Jr.: *See—*
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Hagstrom, Arthur A.; and Yamashita, Takeshi, to Teletype Corporation. Paper width-responsive switch apparatus for printers. 3,828,153, Cl. 200-153.01a.
Hahn & Clay: *See—*
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Hahn Brass Limited: *See—*
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Haldeman, Charles W., to Massachusetts Institute of Technology. Process for coating refractory metals with oxidation-resistant metals. 3,827,953, Cl. 204-37.00r.
Hale, Gloria M. Educational device. 3,827,164, Cl. 35-37.000.
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Hall, Harold, to Brown Oil Tools, Inc. Well reentry system. 3,827,486, Cl. 166-.500.
Hall, William Cornellius; and Peterson, John Merriam. Moldable lead composition. 3,827,982, Cl. 252-62.000.
Haller, Henry E., Jr.; Huettner, Henry F.; and Martin, Elliott E., Jr., to National Valve and Manufacturing Company. Hydraulic shock and sway suppressor. 3,827,537, Cl. 188-314.000.
Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company, N.V. Method of manufacturing an electric rotary machine. 3,827,141, Cl. 29-596.000.
Halliburton Company: *See—*
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Hallworth, Robert, to Lockheed Aircraft Corporation. Actuating means for a vane. 3,827,658, Cl. 244-42.0db.
Halvorsen, Robert M., to Ex-Cell-O Corporation. Fuel spray nozzel. 3,827,638, Cl. 239-534.000.
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Hamanaka, Ernest S., to Pfizer Inc. Phosphono substituted acylpenicillins. 3,828,025, Cl. 260-239.100.
Hamann, Raymond J. Device for washing and coiling hoses. 3,827,097, Cl. 15-40.000.
Hamel, Richard, to Domtar Limited. Sheet material and knife edge abrasive test. 3,827,281, Cl. 73-700.000.
Hamilton, William M.; Reighard, Alan B.; and Tamny, Simon Z., to Nordson Corporation. Modular solenoid-operated dispenser. 3,827,604, Cl. 222-146.0he.
Hamisch, Paul H., Sr., to Monarch Marking Systems, Inc. Method of making record members. 3,827,355, Cl. 101-26.000.
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Hammelmann, Paul. Cleaning device. 3,827,634, Cl. 239-227.000.
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Hansen, Carl J. Harvesting machine for cabbage, or the like. 3,827,503, Cl. 171-38.000.
Hansen, Howard C., to Clark Equipment Company. Brake system. 3,827,758, Cl. 303-3.000.
Hansen, Howard G. Cementitious coating containing non-abrasive filler. 3,827,894, Cl. 106-90.000.
Hansen, Joseph A., to Nelson Muffler Corporation. Exhaust muffler. 3,827,531, Cl. 181-53.000.
Hansen, Theodore E., to Anaconda Company, The. Flexible flat power cable. 3,828,120, Cl. 174-117.0ff.
Hapke, Kenyon A.; Johnson, Edwin S.; and Sidlo, Joseph J., to Bell & Howell Company. Lens focusing system. 3,827,779, Cl. 350-255.000.
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Hayashi, Yoshimasa, to Nissan Motor Company Limited. Device for supplying supplementary fuel to a catalytic engine exhaust cleaner. 3,827,238, Cl. 60-286.000.
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Heath, Arthur R. Vibration-damping system. 3,827,530, Cl. 181-33.00a.
Hebberling, Friedrich, deceased (by Uhl, Lothar J., administrator). Apparatus for coating moving filamentary strands. 3,827,397, Cl. 118-50.000.
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Heikes, Norman L., to Pantec Development Company. Ambulatory orthopedic traction apparatus. 3,827,429, Cl. 128-75.000.
Heimann, Helmit, to Wickuler-Kupper-Brauerei KGaA. Method of and apparatus for testing the condition of bottles. 3,827,812, Cl. 356-240.000.
Heinemann, Heinz; and Weisz, Paul B., to Mobil Oil Corporation. Production of methane and aromatics. 3,827,867, Cl. 48-211.000.
Heitman, Richard E.; Arciprete, Genio R.; Martin, Peter G.; Norris, Richard C.; and Brisk, Richard A., to Little, Arthur D., Inc. Data recording and printing apparatus. 3,828,323, Cl. 340-172.500.
Heitmann, Bob; Kasparek, Alois; and Torbeck, Johann, to Hauni-Werke Korber & Co., KG. Apparatus for transporting rod-shaped articles. 3,827,757, Cl. 302-2.00r.
Henion, Richard S.; and Maggiulli, Cataldo A., to Eastman Kodak Company. Process for preparing 3-alkyl-2-benzothiazolinylidene ketones. 3,828,032, Cl. 260-240.00r.
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Henley, Terry L.; Henley, Frederick A.; and Townsend, Donald I., to HH&T Industries, Inc. Fluid dispensing apparatus. 3,827,467, Cl. 141-104.000.
Hennells, Ransom J., to Compactor Company, Inc. Compactor with single ring-supported bag. 3,827,348, Cl. 100-153.000.
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Herr, Gerhard; and Treber, Willy O., to Gebr. Happich G.m.b.H. Reinforced sun visor, especially for motor vehicles. 3,827,748, Cl. 296-97.00h.
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Hervieux, Harvey Joseph, deceased (by Hervieux, Bernice, administratrix). Machine for conveying expanding and applying endless sealing members. 3,827,124, Cl. 29-200.00a.
Hess, Roy Paul. Three-dimensional vertical stacking dominogame apparatus. 3,827,695, Cl. 273-137.00d.
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Hickman, Stephen L.; and Griewahn, Carl O., to Brazeway, Inc. Heat exchanger and method of manufacture therefor. 3,827,485, Cl. 165-171.000.
Hickmann, Herbert: *See—*
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Higuchi, Yasuo; and Mitsumura, Yoshio, to Chukyo Electric Co., Ltd., mesne. Low speed rotary fluid apparatus with elastic sealing liner. 3,827,835, Cl. 418-56.000.
Hill, Charles C., to Rohr Industries, Inc. Passive switching system. 3,827,370, Cl. 104-130.000.
Hill, Raymond Roger. Liquid flow valve system. 3,827,827, Cl. 417-28.000.
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Himmelstein, Sydney; and Tveter, Richard S. Torque control apparatus. 3,827,506, Cl. 173-12.000.
Hinds, Paul B. Self-contained front projection display cabinet. 3,827,795, Cl. 353-77.000.
Hinman, Arch E., to Johnson Industries, Inc. Self-adjusting furniture support. 3,827,663, Cl. 248-188.300.
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Hobbs, James R. Duct-grille connection clip. 3,827,209, Cl. 52-760.000.
Hocevar, Lorraine E. Crochet loop gauge. 3,827,091, Cl. 6-1.00a.
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Hoffman, Jacob. Tape cutting and attaching device. 3,827,123, Cl. 29-200.00b.
Hoffman, John T. Drill dispensing container. 3,827,820, Cl. 403-165.000.
Hoffman, Neil R.; and Jansen, Johann H., to Kelsey-Hayes Company. Electrically operated disk brake and automatic adjusting mechanism. 3,827,535, Cl. 188-138.000.
Hoffman-La Roche Inc.: *See—*
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Holt, Brian; Randell, Donald Richard; and Jack, James, to Ciba-Geigy Corporation. Acyl hydrazones of 2,2,6,6-tetramethylpiperidine-4-ones. 3,828,052, Cl. 260-293.620.
Hon, Edward H.; and Hon, Robert W. Bipolar electrode structure for monitoring fetal heartbeat and the like. 3,827,428, Cl. 128-2.06e.
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Horichi, Tetsuya, to Sony Corporation. Regulated voltage supply circuit which compensates for temperature and input voltage variations. 3,828,241, Cl. 323-22.00t.
Horiike, Yasuhiro; Shirouzu, Shunji; Tsuji, Shigeo; and Harada, Nozomu, to Tokyo Shibaura Electric Company, Ltd. Semiconductor target. 3,828,232, Cl. 357-31.000.
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Hough, Richard Murray. Rotary grain distribution system. 3,827,578, Cl. 214-16.00r.
Houlgrave, Robert C.; and Weber, Joseph P. Valve seat construction. 3,827,673, Cl. 251-360.000.
Howard, William E. Fishing bobber. 3,827,175, Cl. 43-44.950.
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Howe, Everett. Bench rest device for firearms. 3,827,172, Cl. 42-94.000.
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Hulshizer, Stephen J. Switch with receptacle and switch shunt means. 3,828,224, Cl. 317-112.000.
Humphrey, Samuel A.; and Kissinger, Charles W., to United States of America, Navy. Short range guided missile. 3,827,655, Cl. 244-3.150.
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Sherby, Oleg D.; Huseby, Irvin C.; and Whalen, Robert E., 3,827,921.
Husted, Royce H. Brake valve. 3,827,765, Cl. 303-52.000.
Hutchins, Alma A. Piercing of suction holes in sanding discs. 3,827,194, Cl. 51-170.0mt.
Hutchins, Thomas B., IV. Microwave device including indium joined quartz window closing off hermetic chamber. 3,828,284, Cl. 333-98.00p.
Hutchinson, William Y.; and Kushmuk, Walter P., to Continental Scale Corporation. Weighing scale. 3,827,515, Cl. 177-241.000.
Huttenwerk Oberhansen A.G.: *See—*
Pantke, Heinz-Dieter; and Pohl, Ulrich, 3,827,877.
Hvizd, Andrew, Jr., to Kerite Company, The. High voltage cable having high SIC insulation layer between low SIC insulation layers and terminal construction thereof. 3,828,115, Cl. 174-73.00r.
Hyde, George W., to Permali, Incorporated. Gymnastic horizontal bar. 3,827,689, Cl. 272-63.000.
Hyde, James Stewart, to Varian Associates. Coaxial line to microwave coupler. 3,828,244, Cl. 324-.50r.
Hynes, Joseph H., to Vetco Offshore Industries, Inc. Pipe connectors. 3,827,728, Cl. 285-90.000.
Ichinose, Richard Y.: *See—*
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Ikeda, Yoshitsugi, to Olympus Optical Company Limited. Super telephoto lens system having a small telephoto ratio. 3,827,781, Cl. 350-220.000.
Imanishi, Kunimi. Display device for calendar watch. 3,827,234, Cl. 58-58.000.
Imperato, Louis George, Jr., to Blocked Iron Corporation. Lump ore products and methods of making the same. 3,827,876, Cl. 75-3.000.
Imperial Chemical Industries Limited: *See—*
Cairns, John Francis; Colchester, John Edward; and Entwisle, John Hubert, 3,828,058.
Kay, Ian Trevor; Peacock, Frederick Charles; and Waring, Wilson Shaw, 3,828,043.
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Inaba, Yoshio. Surgical tool. 3,827,437, Cl. 128-328.000.
Inada, Masami: *See—*
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Inada, Masami, to Aisin Seiki Kabushiki Kaisha. Automotive antiskid device with safety apparatus. 3,827,761, Cl. 303-21.0af.
Industrial Concepts Corporation: *See—*
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Inui, Takao, to Kabushiki Kaisha Tange Tekkosho (Tange Industries, Ltd.). Apparatus for supplying shaft like materials. 3,827,581, Cl. 214-1.0pb.
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Isberg, Jon Lewis, to Yule Tree Farms. Christmas tree baling machine. 3,827,353, Cl. 100-232.000.
Ishigami, Hikoichi; Kitayama, Seishi; and Sato, Akira, to Kokusai Denshin Denwa Kabushiki Kaisha. Speech-quality improving system utilizing the generation of higher harmonic components. 3,828,133, Cl. 179-1.0sa.
Ishihra, Masao; Haga, Teruhide; Horiuchi, Hiroshi; Yamaguchi, Hisashi; and Sugino, Osakazu, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic materials. 3,827,886, Cl. 96-50.00r.
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Isomura, Takuji, to Nippondenso Co., Ltd. Fuel injection means for a diesel engine. 3,827,419, Cl. 123-326.000.
Ito, Kiyoo, to Hitachi, Ltd. Magnetic thin film memory. 3,828,328, Cl. 340-174.0nc.
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Ives, Andrew Peter, to Joseph Lucas (Industries) Limited. Braking systems for vehicles. 3,827,762, Cl. 303-21.00f.
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Jackson, John L.; and Steinwinder, John E., to Baker Oil Tools, Inc. Tubing injector and stuffing box construction. 3,827,487, Cl. 166-77.000.
Jacobs, Christopher A. Capacitive discharge ignition system having inductor in parallel with ignition coil. 3,827,418, Cl. 123-148.0cd.
Jacobs, Richard L.: *See—*
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Jacobson, Robert. Test scoring apparatus. 3,827,165, Cl. 35-48.00a.
Jacquet, Robert. Vice. 3,827,684, Cl. 269-32.000.
Jakob, Heinrich: *See—*
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Janhonen, Veikko Ilmari. Reinforced package and method for its preparation. 3,827,552, Cl. 206-424.000.
Janik, Alice Marie, to Miles Laboratories, Inc. Blood agar culture medium. 3,827,942, Cl. 195-100.000.
Janke, Donald E., to Whirlpool Corporation. Apparatus for dispensing a liquid and another material. 3,827,600, Cl. 222-70.000.
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Jewett, Vernon L. Necktie holing method and combination. 3,827,108, Cl. 24-49.0cf.
Jinkawa, Nozomu, to Kawasaki Jukogyo Kabushiki Kaisha. Rotor cooling device in an oscillation type compressor. 3,827,833, Cl. 417-482.000.
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Johanson, Hans A.; Whittaker, Dewey E.; and Phillippi, Larry R., to Moore, Samuel & Company. Composite hose for conductive fluid. 3,828,112, Cl. 174-47.000.
Johansson, Johan Gunnar Inge, to Defibrator Aktiebolag. Grinding apparatus. 3,827,644, Cl. 241-259.300.
Johansson, Sven Lissol; and Lundblad, Leif, to Norob System AB. Cash register intended for safe and fast operation during reception and issue of banknotes and comparable documents. 3,828,166, Cl. 235-7.00a.
Johns-Manville Corporation: *See—*
Smalley, Rodney Roger; Staudinger, John Vendel; Smith, Harvell Morton; and Meeker, Brian Lee, 3,827,210.
Johnsen, John Normann; and Vralstad, Tor, to International Standard Electric Corporation. Oil cable installation method. 3,827,143, Cl. 29-628.000.
Johnson, Claude Jr.; and Palmer, Myron D., to International Business Machines Corporation. Method for improving photoresist adherence. 3,827,908, Cl. 117-201.000.
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Johnson, Joseph L.; and Guidry, Shelby L., to Garrett, Udell, Inc.; a division of Macco Oil Tools, Inc. Method and apparatus for automatically terminating uncontrolled flow of well fluids from a subsurface formation. 3,827,501, Cl. 166-314.000.
Johnson, Marvin M.: *See—*
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Jones, James P., to Endicott Johnson Corporation. Safety boot. 3,827,167, Cl. 36-4.000.
Jones, Marvin R., to Cameron Iron Works, Inc. Apparatus for controlling well pressure. 3,827,511, Cl. 175-25.000.
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Jores, Willi; Gref, Hans; Lehmann, Helmut; Hoffacker, Franz; Luhrig, Hermann; and Kreit, Bernhardt, to AGFA-Gevaert Aktiengesellschaft. Automatic tape winding machine. 3,827,647, Cl. 242-56.00r.
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Junker, Peter; Ribka, Joachim; and Kunstmann, Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Water insoluble benzimidezolene-(5) sulfonamidophenylene-azoaryl dyestuffs. 3,828,019, Cl. 260-157.000.
Justice, Donald S. Magnetopolypile tubular battery and method of making same. 3,827,912, Cl. 136-83.00r.
Kabushiki Kaisha Seisan: *See—*
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Kabushiki Kaisha Tange Tekkosho (Tange Industries, Ltd.): *See—*
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Kaelin, Joseph Richard. Method of introducing oxygen into a liquid to be clarified and device for carrying the method into effect. 3,827,679, Cl. 261-91.000.
Kagata, Tooru, to Aisin Seiki Kabushiki Kaisha. Free wheel locking mechanism. 3,827,524, Cl. 180-70.000.
Kaida, Masaaki: *See—*
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Kakimoto, Masakazu. Small diameter cylindrical air motor for driving grinders and the like. 3,827,834, Cl. 418-15.000.
Kaller, Sigurd. Sealing device. 3,827,700, Cl. 277-59.000.
Kallianides, Milton; and Klein, Gerhart P., to Mallory, P. R., & Co. Inc. Continuous forming of anodes for capacitors. 3,827,951, Cl. 204-28.000.
Kamen, Jack M. Adapter for use with tracheal tubes. 3,827,729, Cl. 285-121.000.
Kamentsky, Louis A.; and Klinger, Isaac, to Bio/Physics Systems, Inc. Particle sorter with segregation indicator. 3,827,555, Cl. 209-111.700.
Kammerer, Archer W., Jr.; and Johnson, Gary R., to Baker Oil Tools, Inc. Disconnectible torque and axial load transmission apparatus. 3,827,258, Cl. 64-23.000.
Kanai, Tomiyoshi; and Ushioda, Shunta, to Showa Aluminium Kabushiki Kaisha. Composite extrusion. 3,827,864, Cl. 29-191.600.
Kaplan, Harry; and Papalos, John, to GAF Corporation. Phosphosulfurized surface active materials and method of producing same. 3,828,084, Cl. 260-399.000.
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer. Diastereomers of α-hydrazino-β-(3,4-disubstituted phenyl) alkanoic acid derivatives. 3,828,049, Cl. 260-284.000.
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Kastner, William G., 20% to Lee, Raymond Organization, The. Automobile antenna installation. 3,828,350, Cl. 343-715.000.
Kato, Koso; and Shiosaka, Makoto, to Hayashibara Biochemical Laboratories, Incorporated. Method of producing pullulan. 3,827,937, Cl. 195-31.00p.
Kato, Taizo. Shaft-coupling device preventable from over-torque transmission. 3,827,260, Cl. 64-29.000.
Kato, Tomezo. Safe. 3,828,338, Cl. 340-261.000.
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Kawai, Isami; Nishikawa, Atsuro; Iwata, Akira; and Sugiyama, Kohei, to Sekisui Kagaky Kogyo Kabushiki Kaisha. Extrusion apparatus for use in the production of thermoplastic resin foams. 3,827,841, Cl. 425-4.00c.
Kawamata, Isamu; Ai, Mitsuo; and Satoh, Ichiya, to Hitachi Ltd. Electromagnetic flow meter. 3,827,298, Cl. 73-194.0em.
Kawano, Reijiro; Goda, Kazuhiro; Yamakawa, Hiroshi; and Otsuka, Masayoshi, to Kurosawa Tele-Communications Limited. Typewriting mechanism for a typewriter machine. 3,827,543, Cl. 197-55.000.
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Kawert, Kjell Gunnar Kawe, to Aktiebolaget Gullhogens Bruk. Precipitating agent for water purification processes, and a method of preparing same. 3,827,984, Cl. 252-179.000.
Kawiecki, Chester J., to Joslyn Mfg. and Supply Co. Overvoltage protector holder and housing. 3,828,290, Cl. 337-186.000.
Kay, Ian Trevor; Peacock, Frederick Charles; and Waring, Wilson Shaw, to Imperial Chemical Industries Limited. 5-Acyl barbituric acid derivatives. 3,828,043, Cl. 260-257.000.
Kaye, Gordon E., to Mallory, P. R. & Co. Inc. Activator for a reserve electric cell, as in a flashlight. 3,827,914, Cl. 136-113.000.
Keating, Robert, to Sun Chemical Corporation, mesne. Beryllium surface treatment. 3,827,919, Cl. 148-6.160.
Keck, Jerry L.; and Rowley, James Robert, to Ludlow Corporation. Fracturable adhesive backing tool. 3,827,340, Cl. 93-58.100.
Keeffe, William M.; Gungle, W. Calvin; and Olson, Albert W., to GTE Sylvania Incorporated. Plasma enshrouded electric discharge device. 3,828,214, Cl. 313-1.000.
Kees, George, Jr. Aneurysm clip. 3,827,438, Cl. 128-346.000.
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Keislich, Klaus; Kerb, Ulrich; Mengel, Klaus; and Domenico, Amadeo, to Schering Aktiengesellschaft. Novel 6α,16α-dimethyl steroids. 3,828,083, Cl. 260-397.450.
Kelleher, John J., to Raytheon Company. Driver circuit using diodes to control effect in switched transistors. 3,828,208, Cl. 307-270.000.
Keller, Hans; and Kleinman, Henry M., to ITT Industries, Inc. Monolithic integrable series stabilization circuit for generating a constant low voltage output. 3,828,240, Cl. 323-22.00t.
Keller, Orville F.: *See—*
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Kelsey-Hayes Company: *See—*

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Kendall, Wyvil R., to General Electric Company. Irradiated fuel processing system. 3,827,579, Cl. 214-8.50c.

Kenney, Harold E.; and Donahue, Edward T., to United States of America, Agriculture. Metallic dibasic fatty soap based greases. 3,828,086, Cl. 260-413.000.

Kent, Bromley: *See—*
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Khan, Yusuff Mohammed. Combined cigarette holder and ash receptacle. 3,827,444, Cl. 131-174.000.

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Kienle, Richard F.: *See—*
Golze, Richard R.; and Kienle, Richard F., 3,827,740.

Kiessling, Rudolf H., to Square D Company. Miniaturized joystick and cam structure with push button switch operating means. 3,827,313, Cl. 74-471.0xy.

Kilbride, Robert S.: *See—*
Kurk, Kenneth G.; and Kilbride, Robert S., 3,827,577.

Kimura, Kazuya: *See—*
Sakai, Yutaka; and Kimura, Kazuya, 3,828,199.

King, Graham E.: *See—*
Miles, Leon H.; and King, Graham E., 3,827,977.

Kinugasa, Hiroaki; Tsukamoto, Masatoshi; Mizuta, Hiroyuki; and Uno, Hitoshi, to Dainippon Pharmaceutical Co., Ltd. Chalcone derivatives and preparation thereof. 3,828,030, Cl. 260-240.00j.

Kirik, Edward F., to Syntex Rubber Corporation. Rail mounting pad. 3,827,631, Cl. 238-283.000.

Kirsch, Klaus; and Grotewold, Werner, to Volkswagenwerk Aktiengesellschaft. Testing a fuel injection valve. 3,828,247, Cl. 324-28.00r.

Kirzner, Samuel, to Byron, W. H., Inc. Fixture for sharpening thread chasers. 3,827,195, Cl. 51-220.000.

Kish, Arthur S., to Murray Corporation. Means for preventing flow of lubricant-saturated refrigenant in automotive air-conditioning systems. 3,827,255, Cl. 62-296.000.

Kishino, Shunji; Abe, Takahiro; Tamura, Reish; and Amano, Hiroshi, to Japan Steel Works Ltd. Die holding device in an indirect extrusion machine. 3,827,271, Cl. 72-253.000.

Kishino, Shunji; Abe, Takahiro; and Tamura, Reishi, to Japan Steel Works Ltd. Shearing device for unextruded butts in an indirect metal extrusion machine. 3,827,273, Cl. 72-255.000.

Kissinger, Charles W.: *See—*
Humphrey, Samuel A.; and Kissinger, Charles W., 3,827,655.

Kistler, Laurenz. Support structure for overhead concrete molding forms. 3,827,665, Cl. 248-354.00p.

Kistler, Laurenz. Mobile concrete ceiling mold platform. 3,827,840, Cl. 425-62.000.

Kita, Jyun'Ichiro: *See—*
Masaki, Mitsuo; Fikui, Kiyoshi; Kita, Jyun'Ichiro; and Uchida, Izuhiko, 3,828,028.

Kitayama, Seishi: *See—*
Ishigami, Hikoichi; Kitayama, Seishi; and Sato, Akira, 3,828,133.

Klasek, Ladislav J.: *See—*
Armstrong, Thaddeus J.; Styczen, John A.; and Klasek, Ladislav J., 3,827,284.

Klaus, Jacobs, to Meyer, Roth & Pastor. Overhung shear. 3,827,323, Cl. 83-310.000.

Klein, Gerhart P.: *See—*
Kallianides, Milton; and Klein, Gerhart P., 3,827,951.

Kleinman, Henry M.: *See—*
Keller, Hans; and Kleinman, Henry M., 3,828,240.

Klinger, Isaac: *See—*
Kamentsky, Louis A.; and Klinger, Isaac, 3,827,555.

Knapp, William H.; Kesl, Elmer M.; and Miner, Robert C., to International Harvester Company. Coupling device. 3,827,816, Cl. 403-322.000.

Kneller, Klaus; Trub, Jean; and Gregoire, Francois, to Schweizerische Industrie-Gesellschaft. Device for cooling extruded plastic tubing. 3,827,842, Cl. 425-72.000.

Knepler, John T., to Dickey-John Corporation. Grain analysis computer circuit. 3,828,173, Cl. 235-151.350.

Knickerbocker, Michael Gene, to Diamond International Corporation. Locking means for liquid dispensers. 3,827,605, Cl. 222-153.000.

Knickerbocker, Michael Gene, to Diamond International Corporation. Pump immobilizing means. 3,827,606, Cl. 222-384.000.

Knodel, James R.: *See—*
Ko, Wen H.; Knodel, James R.; and Hung, Chih Piao, 3,828,237.

Knoll, Glenn F., to United States of America, Atomic Energy Commission. Apparatus for measuring radioactivity in the human eye. 3,827,427, Cl. 128-2.00a.

Ko, Wen H.; Knodel, James R.; and Hung, Chih Piao, to North American Manufacturing Company. Fuel-air ratio controller. 3,828,237, Cl. 318-619.000.

Kobashi, Uichiro; Inada, Masami; and Takayama, Katsuki, to Aisin Seiki Kabushiki Kaisha. Control valve assemblies for hydraulic brade systems of automobiles. 3,827,763, Cl. 303-21.00f.

Kobayashi, Ikuya, to Toyota Jidosha Kogyo Kabushiki Kaisha. Operatin indicating device for hydraulic brake system. 3,828,308, Cl. 340-52.00c.

Kobayashi, Kengo; and Manabe, Mitsuo, to Fujitsu Limited. Numerically controlled machine tool including backlash elimination. 3,828,238, Cl. 318-630.000.

Kobayashi, Tsuyoshi: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,828,027.

Kobayasi, Hiroyuki, to Matsushita Electric Industrial Company, Limited. Apparatus for epitaxial growth from the liquid state. 3,827,399, Cl. 118-64.000.

Koeblitz, William E., to Gould Inc. Pulsed droplet ejecting system. 3,828,357, Cl. 346-140.000.

Koehring Company: *See—*
Krause, Kenneth M., 3,827,522.

Kofman, Wlodzimierz: *See—*
Max, Jacques; and Kofman, Wlodzimierz, 3,827,629.

Kohl, William Leonard: *See—*
Theriault, Robert John; and Kohl, William Leonard, 3,827,941.

Koizumi, Yutaka, to Ricoh Co., Ltd. Device for preventing development of non-image marginal portions of a photoreceptor in electrophotographic copying apparatus. 3,827,799, Cl. 355-3.00r.

Kojima, Kazumi: *See—*
Yamazaki, Shingo; Takemura, Akira; Kojima, Kazumi; Nishimura, Masato; Tsuchida, Teruo; and Yonemoto, Tadashi, 3,828,003.

Kojima, Yukiyasu; Akiyoshi, Kazuo; and Kawada, Kenji, to Showa Denko K.K. Process of complete cryogenic vaporization of liquefied natural gas. 3,827,247, Cl. 62-52.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Ishigami, Hikoichi; Kitayama, Seishi; and Sato, Akira, 3,828,133.
Yamamoto, Takaya, 3,828,231.

Koller, Floyd G.: *See—*
Bolden, James D.; and Koller, Floyd G., 3,827,671.

Kolm, Jan: *See—*
Baklien, Asbjorn; and Kolm, Jan, 3,828,061.

Kominami, Naoya; Iwaisako, Toshiyuki; and Ohki, Kusuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Reforming with platinum-lead catalyst. 3,827,971, Cl. 208-139.000.

Kominami, Naoya; Iwaisako, Toshiyuki; and Ohki, Kusuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of producing aromatic hydrocarbons. 3,827,972, Cl. 208-139.000.

Kominami, Naoya; Iwaisako, Toshiyuki; and Ohki, Kuso, to Asahi Kasei Kogyo Kabushiki Kaisha. Reforming with a coprecipitated platinum-lead catalyst. 3,827,973, Cl. 208-139.000.

Kominami, Naoya; Iwaisako, Toshiyuki; and Ohki, Kusuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Pt-Pb catalyst compositions. 3,827,988, Cl. 252-441.000.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*
Almstrom, Sten Hakan; and Gothberg, Yngve Roland, 3,827,241.

Konig, Horst: *See—*
Wenzel, Werner; Meraikib, Mohammed; Franke, Friedrich H.; and Konig, Horst, 3,827,878.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ishihra, Masao; Haga, Teruhide; Horiuchi, Hiroshi; Yamaguchi, Hisashi; and Sugino, Osakazu, 3,827,886.

Kono, Tateomi, to Minolta Camera Kabushiki Kaisha. Device for supporting sensitive paper cassette for electrophotography copier. 3,827,687, Cl. 271-117.000.

Konopka, John G., to Warwick Electronics, Inc. Memory circuit. 3,828,205, Cl. 307-238.000.

Kornsey, Robert J.: *See—*
Stratienko, Andrew; and Kornsey, Robert J., 3,827,407.

Kortner, Lothar: *See—*
Lamm, Heinz; and Kortner, Lothar, 3,827,411.

Koski, William L.; and Swenson, Emil S. Apparatus for cooling a living organ. 3,827,251, Cl. 62-217.000.

Kouno, Hiroshi; and Kubo, Sueki, to Kurosaki Yogyo Co., Ltd. Mobile device for repairing furnace walls and the like. 3,827,633, Cl. 239-132.300.

Koutny, George H., to Pace Promotions, Inc. Display stand for supporting prehung articles. 3,827,571, Cl. 211-59.000.

Krakowski, Anthony J.; and Krakowski, Daniel S. Air hose adapter. 3,827,635, Cl. 239-391.000.

Krakowski, Daniel S.: *See—*
Krakowski, Anthony J.; and Krakowski, Daniel S., 3,827,635.

Krall, Wilhelm: *See—*
Arndt, Peter Joseph; Blitz, Hans-Dieter; Huebner, Klaus; Krall, Wilhelm; Kurth, Hans-Joachim; Mueller, Manfred; and Pennewiss, Horst, 3,828,012.

Kramb, Kenneth D.; and Isabell, Walter J., to K.I.C. Incorporated. Container safety closure. 3,827,593, Cl. 215-9.000.

Krause, Kenneth M., to Koehring Company. Fluid pressure actuated brake light switch. 3,827,522, Cl. 180-6.00r.

Krause, Peter: *See—*
Frietzsche, Gunther; and Krause, Peter, 3,827,529.

Krawetz, Barton, to United States of America, Atomic Energy Commission. Electron beam-pumped gas laser system. 3,828,274, Cl. 331-94.500.

Kreider, Eunice M., to Searle, G. D., & Co. (2-Methyl-5nitro-1-imidazolyl)ethyl) heteroaryloxy. 3,828,056, Cl. 260-296.00r.

Kreider, Eunice M., to Searle, G. D. & Co. 2-Methyl-5-nitro-1-(2-phenylthioethyl) imidazoles. 3,828,065, Cl. 260-309.000.

Kreit, Bernhardt: *See—*
Jores, Willi; Gref, Hans; Lehmann, Helmut; Hoffacker, Franz; Luhrig, Hermann; and Kreit, Bernhardt, 3,827,647.

Krenzer, John, to Velsicol Chemical Corporation. Dialkyl acetals of heterocyclic ureidoacetaldehyde. 3,827,875, Cl. 71-90.000.

Kress, Reinhard: *See—*
Diepers, Heinrich; Schmidt, Otto; and Kress, Reinhard, 3,827,950.

Krokos, Raymond M., to Evans Products Company. Cargo tie down. 3,827,662, Cl. 248-119.00r.

Kruka, Vitold R.: *See—*
Meier, Dale J.; and Kruka, Vitold R., 3,827,447.

Krygowski, Richard P.: *See—*
Ader, William R.; and Krygowski, Richard P., 3,827,416.

Kubo, Sueki: *See—*
Kouno, Hiroshi; and Kubo, Sueki, 3,827,633.

Kubota, Hiroshi, to Furuno Electric Company, Limited. Dodging course calculating device. 3,827,150, Cl. 33-1.0sd.

Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., to Polar Ware Company. Disposal of waste by incineration. 3,827,378, Cl. 110-9.00r.

Kuhl, Bernard A.; and Mason, John B., to General Motors Corporation. Suspension system for hitch assembly. 3,827,518, Cl. 180-12.000.

Kuhle, Englebert: *See—*
Widdig, Arno; Kuhle, Englebert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,828,094.

Kuhn, Falk; and Rombach, Friedrich, to Fouquet-Werke Frauz & Planck. Knitting machine selector jack butt removal apparatus. 3,827,615, Cl. 225-103.000.

Kuhrau, Lothar: *See—*
Liebmann, Werner; and Kuhrau, Lothar, 3,827,193.

Kujava, John M.: *See—*
Fogelberg, Clement V.; and Kujava, John M., 3,827,870.

Kujundzic, Nedjeljko: *See—*
Gluncic, Berislav; and Kujundzic, Nedjeljko, 3,828,044.

Kunstmann, Walter: *See—*
Junker, Peter; Ribka, Joachim; and Kunstmann, Walter, 3,828,019.

Kupex AG: *See—*
Stephany, Christian; Braunmiller, Heinz; and Katzer, Johannes, 3,827,637.

Kureth, Richard L. Boat stabilizer. 3,827,389, Cl. 115-12.00a.

Kurk, Kenneth G.; and Kilbride, Robert S., to Moorman Manufacturing Company. Apparatus for assembling layers of packages on a pallet. 3,827,577, Cl. 214-6.00p.

Kurosaki Yogyo Co., Ltd.: *See—*
Kouno, Hiroshi; and Kubo, Sueki, 3,827,633.

Kurosawa Tele-Communications Limited: *See—*
Kawano, Reijiro; Goda, Kazuhiro; Yamakawa, Hiroshi; and Otsuka, Masayoshi, 3,827,543.

Kurth, Hans-Joachim: *See—*
Arndt, Peter Joseph; Blitz, Hans-Dieter; Huebner, Klaus; Krall, Wilhelm; Kurth, Hans-Joachim; Mueller, Manfred; and Pennewiss, Horst, 3,828,012.

Kushmuk, Walter P.: *See—*
Hutchinson, William Y.; and Kushmuk, Walter P., 3,827,515.

Kusunoki, Yasuo; and Okasaki, Hiroshi, to Nippon Steel Chemical Co., Ltd. Process for producing pyridine bases. 3,828,051, Cl. 260-290.00p.

Kutino, Tsuyoshi: *See—*
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tsuyoshi, 3,827,140.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Shimizu, Yoshiaki; Tatano, Toshio; Akiyama, Yoshiyuki; and Yamaguchi, Akira, 3,827,936.

Labarber, James P.; Shade, Ross A.; and Terbrack, William H., to Wrather, J. D., Jr., mesne. Data handling system employing time modulation. 3,828,279, Cl. 332-2.000.

Labes, Mortimer M., to Temple University. Stable anil-type nematic liquid crystals. 3,827,780, Cl. 350-160.01c.

Labler, Ludwig: *See—*
Furst, Andor; Labler, Ludwig; Meier, Werner; Muller, Peter; Scott, John William; and Widmer, Erich, 3,828,062.

Labofina S.A.: *See—*
Cahen, Raymond M.; Debus, Henri R.; and Aga, Rene L., 3,827,974.

LaFlamme, Philip A.; and Couture, Romeo E., to Greenerd Press Machine Company, Inc. Control system for hydraulic presses. 3,827,328, Cl. 83-617.000.

L'Air Liquide, Societe Anonyme Pour L'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Chovet, Patrice; Rollin, Claude; Galasso, Honore; and Prost, Roger, 3,827,252.

Lakin, Harold: *See—*
Bristol, Thomas R.; Lakin, Harold; and Renga, Fred L., 3,827,312.

Lamb, Raymond K.: *See—*
Piazza, Andre L.; and Lamb, Raymond K., 3,827,488.

Lambert, Russell R., Sr., 1/2 to Boney, Warren X. Vehicle towing and jacking device. 3,827,586, Cl. 214-86.00a.

Lambertz, Martin R., to Hahn Brass Limited. Patio door roller. 3,827,104, Cl. 16-18.000.

Lamm, Heinz; and Kortner, Lothar, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine of trochoidal construction. 3,827,411, Cl. 123-119.00r.

Lamont, Philip E.: *See—*
Grimmett, Earl S.; and Lamont, Philip E., 3,827,946.

Lance, Raymond E., to Construction Technology, Inc. Hydraulically powered demolition device. 3,827,507, Cl. 173-15.000.

Land, Edwin H.; and Cronin, David V. Temperature dependant start switch. 3,828,293, Cl. 337-417.000.

Landler, Josef: *See—*
Spietschka, Ernst; and Landler, Josef, 3,828,072.

Langwell, John D. Clamp device for releasably securing a stack of sheets together while enabling the sheets to be successively torn away. 3,827,109, Cl. 24-67.500.

Laronze, Joseph, to BBC Brown Boveri & Company Limited. Tubular inductor structure for linear motors. 3,828,211, Cl. 310-13.000.

Larry, John R. High adhesion metallizing compositions. 3,827,891, Cl. 106-1.000.

Larsen, Bob W.: *See—*
Zimmerman, Bryant S.; and Larsen, Bob W., 3,827,183.

Larson, John O., to Lewis Bolt & Nut Company. Floating type drive spike accessory. 3,827,509, Cl. 173-128.000.

Larson, Perley E. Tissue box holder for automobiles. 3,827,664, Cl. 248-311.000.

Laser Alignment, Inc.: *See—*
Menzel, Ramon, 3,827,155.
Roodvoets, Roger J.; and Applegate, Merlin J. (said Roodvoets assor. to), 3,827,156.

Lau, Dicksen T. W. Mosiac composite sheet composed of a new type of greeting cards. 3,827,170, Cl. 40-158.00r.

Laurenceau, Bernard, to Thomson-CSF. Stacked beam radar. 3,828,349, Cl. 343-12.0sb.

Laurent, Jean; and Duconge, Claude, to Institut Francais du Petrole des Carburants et Lubrifiants. Device for a quick connection of traction elements. 3,827,814, Cl. 403-301.000.

Laurent, Roger, to Poma 2.000 S.A., mesne. Haulage grip for releasably gripping a traction cable. 3,827,372, Cl. 104-209.000.

Laurenti, Italo Marco Levi. Method of producing new scissors. 3,827,316, Cl. 76-104.00a.

Laurenz, Frank R. Animal facility. 3,827,402, Cl. 119-15.000.

Leathem, Douglas B.: *See—*
Bolinger, John F.; and Leathem, Douglas B., 3,827,540.

Lebedev, Alexei Pavlovich: *See—*
Schedrovitsky, Savely Solomonovich; Mash, Dmitry Matveevich; Golovko, Zoya Ivanovna; Goncharevich, Leonid Fomich; Lebedev, Alexei Pavlovich; Dubrovin, Jury Mikhailovich; and Suut, Nikolai Karlovich, 3,828,339.

Lebedev, Boris Nikolaevich: *See—*
Avdjukov, Vyacheslav Ivanovich; and Lebedev, Boris Nikolaevich, 3,827,896.

LeBlanc, Robert Bruce, to Cotton, Incorporated. Production of textile materials with improved flame retardance. 3,827,907, Cl. 117-62.100.

Lechtenbert, Leo J.: *See—*
Harkness, Joseph R.; Santi, John D.; and Lechtenbert, Leo J., 3,828,212.

Lederer, George H. Stacking device. 3,827,582, Cl. 214-7.000.

Lee, Arthur L. Articulated haulage vehicle. 3,827,720, Cl. 280-400.000.

Lee, Raymond Organization, The: *See—*
Kastner, William G., 3,828,350.

Lee, Richard A.; and Lins, William F., to United States of America, Army. Comfort level measuring device. 3,828,170, Cl. 235-151.300.

Lee, Walter Joe, to Dow Chemical Company, The. Self-sealing system for storing and dispensing a fluid material. 3,827,455, Cl. 137-375.000.

Leek, Wayne E.: *See—*
English, Myrle H.; Goodstal, Laurence; Leek, Wayne E.; Sanzo, Robert J.; Turner, Robert L.; Workman, Clark B.; and Yetter, Edward W., 3,827,334.

Leenaards, Antoine Joseph, to Societe du Bouchon Couronne (Crown Cork Conpany France). Twist-off crown closure with seal. 3,827,594, Cl. 215-324.000.

Leesona Corporation: *See—*
Lesser, Eliyu, 3,827,226.

Lefeuvre, Andre, to Regie Nationale des Usines Renault. Automatic tensioning and release devices for automotive safety harnesses. 3,827,714, Cl. 280-150.0sb.

Lehmann, Helmut: *See—*
Jores, Willi; Gref, Hans; Lehmann, Helmut; Hoffacker, Franz; Luhrig, Hermann; and Kreit, Bernhardt, 3,827,647.

Lehmann, Joseph L., to Weston Instruments, Inc. Display device with ambient light graticule illuminator. 3,828,127, Cl. 178-7.840.

Leister, Heinrich: *See—*
Bien, Hans-Samuel; Harms, Wolfgang; Schmitz, Reinold; Schmitz, Reinold; and Leister, Heinrich, 3,828,040.

Lemelson, Jerome H. Composite mold wall structure. 3,827,667, Cl. 249-80.000.

Lemelson, Jerome H. Game apparatus. 3,827,694, Cl. 273-113.000.

Lemelson, Jerome H. Optical sheet material. 3,827,783, Cl. 350-104.000.

Lerner, Julius; and Campbell, George F., Jr., to Sun Oil Company of Pennsylvania. Fluid leakage measuring apparatus. 3,827,283, Cl. 73-40.000.

Lesser, Eliyu, to Leesona Corporation. Ring rail tracking arrangment for ring spinning machines. 3,827,226, Cl. 57-34.00r.

Letson and Burpee Ltd.: *See—*
Allen, Francis Edwin, 3,827,324.

Leverenz, Kenneth H.: *See—*
Leverenz, Melvin E.; and Leverenz, Kenneth H., 3,827,450.

Leverenz, Melvin E.; and Leverenz, Kenneth H., to Diamond Crystal Salt Company. Automatic control for debrining relish stock and other materials. 3,827,450, Cl. 137-88.000.

Levine, Marshall S.: *See—*
Miller, Melvin N.; Levine, Marshall S.; and Partin, Melvin E., 3,827,804.

Leviton Manufacturing Co., Inc.: *See—*
Johnson, George E.; and Newman, Walter, 3,828,299.

Lewis Bolt & Nut Company: *See—*
Larson, John O., 3,827,509.

Lewis, Edward Earl: *See—*
Blane, Leslie Lewis; Bottonari, Kenneth Charles; and Lewis, Edward Earl, 3,828,140.

Lewis, Herbert J.; and Ziegler, William H., to United States of America, Army. Fluid system with angular displacement sensor for axially reciprocating shaft. 3,827,335, Cl. 91-3.000.

Lewis, Theras Gordon, to Bell Telephone Laboratories, Incorporated. Time division conference hybrid circuit. 3,828,146, Cl. 179-170.0nc.

Lhomme, Francois G., to Regie Nationale Des Usines Renault. Cutting tool adjustment devices. 3,827,823, Cl. 408-158.000.

Liberman, Harvey W.; Harvey, Samuel E.; and Voorhees, Steven C., to Carrier Corporation, mesne. Automatic self-leveling forks. 3,827,587, Cl. 214-302.000.

Lichtblau, George Jay. Noise rejection circuitry. 3,828,337, Cl. 340-280.000.

Liebmann, Werner; and Kuhrau, Lothar, to Schneider Maschinenbau GmbH. System for balancing rotary bodies. 3,827,193, Cl. 51-169.000.

Lietard, Michel: *See—*
Giordano, Jean-Louis; and Lietard, Michel, 3,827,764.

Lilly, Rodger Hedley: *See—*
Needham, James Christopher; Ellis, Colin Ronald George; and Lilly, Rodger Hedley, 3,827,138.

Limpens, Karl: *See—*
Glindmeyer, Friedrich; Limpens, Karl; and Hennenberg, Wilgelm, 3,827,463.

Linder, Ernst; Zechnall, Richard; Wahl, Josef; and Schmidt, Peter Jurgen, to Bosch, Robert GmbH. Method and apparatus for removal of noxious compnents from the exhaust of internal combustion engines. 3,827,237, Cl. 60-274.000.

Linderman, William A.: *See—*
Boggs, William E.; Boro, Franklin; Linderman, William A.; and Snow, Roland B., 3,827,922.

Lindh, Karl Gosta: *See—*
Erma, Eero Antero; Fredin, Stig Bertil Arthur; Lindh, Karl Gosta; and Timgren, Leo Anders, 3,827,410.

Lindo, Neil A.: *See—*
Zinnes, Harold; and Lindo, Neil A., 3,828,055.
Zinnes, Harold; and Lindo, Neil A., 3,828,073.

Lindsay, David B., Jr. Aircraft having recoilless rifle. 3,827,332, Cl. 89-1.700.

Lindsay, Edward R., Jr.: *See—*
Serfass, Earl J.; Lindsay, Edward R., Jr.; Holmes, Gene Myron; Aid, James D.; and Bishop, French, Jr., 3,827,561.

Lindsey, Cornelius: *See—*
Talbot, William Carl; and Lindsey, Cornelius, 3,827,160.

Lindsey, William C.: *See—*
United States of America, National Aeronautics and Space Administration, 3,828,138.

Lines, Raydon Ayers. Control for radial type pumps of the like. 3,827,831, Cl. 417-273.000.

Lins, William F.: *See—*
Lee, Richard A.; and Lins, William F., 3,828,170.

Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Boschetti, Eugene; Molho, Darius; and Fontaine, Louis, 3,828,095.

Little, Arthur D., Inc.: *See—*
Heitman, Richard E.; Arciprete, Genio R.; Martin, Peter G.; Norris, Richard C.; and Brisk, Richard A., 3,828,323.

Liu, Ching-Chung. Self contained test probe employing high input impedance. 3,828,256, Cl. 324-133.000.

Livenick, Corwin E.; Malinowski, Stanley; and Vann, Robert D., to Motorola, Inc. Temperature compensated mounting structure for coupled resonator crystals. 3,828,210, Cl. 310-9.100.

Lloyd, Kenneth; and Michael, Anthony Dennis, to Glacier Metal Company Limited, The. High lead aluminium alloy. 3,827,882, Cl. 75-138.000.

Lockheed Aircraft Corporation: *See—*
Hallworth, Robert, 3,827,658.
Mershon, Butler A.; and Wilhelm, Keith A., 3,827,278.

Lockwood, Frank R., to Chubb Tire Security Limited. Fire-extinguishing apparatus. 3,827,502, Cl. 169-51.000.

Lode, Tenny D. Amplifier buffered resistance network digital to analog and analog to digital converter system. 3,828,345, Cl. 340-347.0da.

Lodjic, Carl L., to Global Erectors, Inc. Baggage loader. 3,827,590, Cl. 214-505.000.

Lofquist, Robert Alden, to Allied Chemical Corporation. Cationic dyeable polyamide of improved physical properties. 3,828,009, Cl. 260-78.001.

Lohr, Raymond J.; and Smith, James, to Louis Marx & Co., Inc. Toy cycle construction. 3,827,719, Cl. 280-259.000.

Long, Robert Gordon, to D.D.I. Communications, Inc. Digital data change detector. 3,828,312, Cl. 340-146.10r.

Long, William P.: *See—*
Augustin, Eugene H.; and Long, William P., 3,827,872.

Lonow, Martin S., to Anaconda Company, The. Inflatable corona ring and cable termination method employing same. 3,828,116, Cl. 174-73.00r.

Lorain Products Corporation: *See—*
Chambers, Charles W., Jr., 3,828,139.
Chambers, Charles W., Jr., 3,828,281.

Lorenz, Watter; Boshagen, Horst; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Benzisoxazolo (thiono) phosphoric (phosphonic) acid esters. 3,828,063, Cl. 260-307.00d.

Louis Marx & Co., Inc.: *See—*
Lohr, Raymond J.; and Smith, James, 3,827,719.

Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Feit, Peter Werner; and Nielsen, Ole Bent Tvarmose, 3,828,059.

Lowderman, Ernest W.; Barrington, Leland L.; and Young, Ferdinand, Jr., to Armco Steel Corporation. Rotary hearth furnace and system for forming balls. 3,827,267, Cl. 72-69.000.

Loy, Fred W.; Harms, William J.; Wojahn, Charles W.; and Karasinski, Frederick, to Gardner-Denver Company. Apparatus for forming twisted pairs of conductor wire. 3,827,465, Cl. 140-149.000.

Lubowitz, Hyman R., to TRW Inc. Method of bonding using improved polyimide adhesives. 3,827,927, Cl. 156-331.000.

Lucas Aerospace Limited: *See—*
Needham, Victor, 3,827,966.

Lucia, George C. Steering mechanism for snowmobile. 3,827,516, Cl. 180-5.00r.

Lucifer S.A.: *See—*
Stampfli, Harald, 3,827,672.

Luck, Russell M.; and Gainer, Gordon C., to Westinghouse Electric Corporation. Asbestos-thickened cycloaliphatic epoxy materials for use in atmospheres of arced sulfur hexafluoride and articles thereof. 3,828,000, Cl. 260-37.0ep.

Ludder, Rodney E. Non-reusable nestable cup or container. 3,827,620, Cl. 229-1.50b.

Ludlow Corporation: *See—*
Keck, Jerry L.; and Rowley, James Robert, 3,827,340.

Luffy, Dennis J.; and Mosemiller, Robert L., to Miller Printing Machinery Co. Sheet delivery mechanism. 3,827,688, Cl. 271-203.000.

Luhrig, Hermann: *See—*
Jores, Willi; Gref, Hans; Lehmann, Helmut; Hoffacker, Franz; Luhrig, Hermann; and Kreit, Bernhardt, 3,827,647.

Lundblad, Leif: *See—*
Johansson, Sven Lissol; and Lundblad, Leif, 3,828,166.

Lunde, Einar O.: *See—*
Lunde, Thomas Trygve; and Lunde, Einar O., 3,827,384.

Lunde, Thomas Trygve; and Lunde, Einar O. Containership. 3,827,384, Cl. 114-72.000.

Lundgren, Claes E. G.; and Akesson, Stig L., to AGA Aktiebolag. Breathing apparatus. 3,827,432, Cl. 128-142.200.

Lundquist, Ulf Rolfsson, to Forenade Fabriksverken Eskilstuna. Hot gas engine. 3,827,240, Cl. 60-521.000.

Lunquist, Frank C.: *See—*
Vogelgesang, Peter J.; Alexander, Jerry L.; and Lunquist, Frank C., 3,828,359.

Lupo, Joseph Paul. Automatic transmission shifting point and firmness variation control. 3,827,315, Cl. 74-863.000.

Lupton, Joseph D. Ionization chamber with a porous anode. 3,828,184, Cl. 250-83.6ft.

Ly, Manuel G.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,828,049.

Lynch, Robert W., to Specialty Products Development Corporation. Pyrotechnic gas generator with homogenous separator phase. 3,827,715, Cl. 280-150.0ab.

Lyness, Warren I.; Amel, Ronald T.; and Booth, Gary E., to Procter & Gamble Company, The. Heterocyclic nitrogen-and sulfur-containing optical brightener compounds. 3,828,060, Cl. 260-301.000.

Lyons, Dermot: *See—*
Charlton, John Cecil; and Lyons, Dermot, 3,827,986.
M & J Valve Company: *See—*
Grove, Marvin H., 3,827,285.
Mabuchi, Kenichi, to Mabuchi Motor Co., Ltd. Electrically driven model airplane. 3,827,181, Cl. 46-243.0av.
Mabuchi Motor Co., Ltd.: *See—*
Mabuchi, Kenichi, 3,827,181.
Macco Oil Tool Company, Inc.: *See—*
Dinning, Robert W., 3,827,491.
Mace, Dennis Geoffrey Wallace: *See—*
Moore, Ronald Leslie; and Mace, Dennis Geoffrey Wallace, 3,828,220.
Macher, Karl, to Schneider, Jos. & Co. Optische Werke. High-speed varifocal objective system. 3,827,786, Cl. 350-186.000.
MacKay, Patrick W.: *See—*
Celada, Juan; Pena, Jesus Maria; MacKay, Patrick W.; de la Pena, Ramon; Martinez, Enrique Ramon; and de la Torre, Maria Teresa, 3,827,879.
MacKinnon, Alan G., to Foundation equipment Corporation, The. Mechanical safety pile monkey. 3,827,508, Cl. 173-112.000.
MacMaster, Malcolm D.; and Morris, Herbert R., to Emhart Corporation. Refrigerated display case. 3,827,254, Cl. 62-256.000.
Madura, Francis Eli; and Kent, John Allan, to Amsted Industries Incorporated. Fifth wheel coupling. 3,827,709, Cl. 280-43.00a.
Maggiulli, Cataldo A.: *See—*
Henion, Richard S.; and Maggiulli, Cataldo A., 3,828,032.
Magnum Automotive Equipment, Inc.: *See—*
Besuden, David W., 3,827,474.
Brosene, William G., Jr., 3,827,475.
Magrath, Joseph M.: *See—*
Magrath, Joseph M.; and Hierath, Leonard L. (said Hierath assor. to said), 3,827,601.
Magrath, Joseph M.; and Hierath, Leonard L., said Hierath assor. to said Magrath, Joseph M. Hand powered liquid dispenser of the metering type. 3,827,601, Cl. 222-83.000.
Maher, John P.: *See—*
Fabricius, John H.; and Maher, John P., 3,828,154.
Mahoney, Ralph W., to Sperry Rand Corporation. On-the-fly printer with shortened print cycle. 3,827,357, Cl. 101-93.00c.
Maiale, Louis J. Sheet steel draw die. 3,827,272, Cl. 72-203.000.
Maison, Richard L., to Rohr Industries, Inc. Adhesion air bearing feedback control apparatus and method. 3,827,364, Cl. 104-23.0fs.
Majkrzak, Charles P.; and Polgar, Michael S., to International Telephone and Telegraph Corporation. Integrally-wound antenna helix-coilform. 3,828,353, Cl. 343-873.000.
Makiguchi, Michinori: *See—*
Tsuruta, Hidemasa; and Makiguchi, Michinori, 3,827,379.
Makino, Takayuki; Ishii, Shinya; and Ohkubo, Rokuji, to Messrs. Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply device for internal combustion engines. 3,827,415, Cl. 123-119.00r.
Malinowski, Stanley: *See—*
Livenick, Corwin E.; Malinowski, Stanley; and Vann, Robert D., 3,828,210.
Mallary, Miller B., to Engelhard Minerals & Chemicals Corporation. Purification of kaolin clay by froth flotation. 3,827,556, Cl. 209-166.000.
Mallory, P. R., & Co., Inc.: *See—*
Fagan, Franklin G., Jr., 3,827,916.
Kallianides, Milton; and Klein, Gerhart P., 3,827,951.
Kaye, Gordon E., 3,827,914.
Neely, Lloyd F., 3,827,883.
Waugh, Jerry, 3,827,699.
Malmberg, Earl W.: *See—*
Dycus, Dale W.; Malmberg, Earl W.; and Wilchester, Harry L., 3,827,497.
Maloof, Ralph: *See—*
De Vault, Robert T.; and Maloof, Ralph, 3,827,390.
Malott, Thomas J.; and Paul, John C., to Parker-Hannifin Corporation. Directional control valve. 3,827,453, Cl. 137-117.000.
Mameniskis, Walter A.: *See—*
Melpolder, Frank W.; Guetens, Edward G.; and Mameniskis, Walter A., 3,827,947.
Manabe, Mitsuo: *See—*
Kobayashi, Kengo; and Manabe, Mitsuo, 3,828,238.
Mandy, Zoltan P.; Akerhielm, George; and Tulowiecki, David, to Carrier Corporation. Distributor for gel-like materials. 3,827,481, Cl. 165-118.000.
Manghi, Carlo A.: *See—*
De Marco, Franco; and Manghi, Carlo A., 3,828,141.
Mango, Silvio D. Heated, vibratory track sander. 3,827,736, Cl. 291-20.000.
Mann, George Forbes, to Burroughs Wellcome Co. Culture apparatus. 3,827,943, Cl. 195-127.000.
Mansfield, Gerald R.; Rogers, Charles H.; and Sullivan, Kevin J., to Corning Glass Works. System for controlling centrifugal forces to produce cellular monolayers. 3,827,805, Cl. 356-73.000.
Manuel, Malcolm O., to A-T-O Inc. Spray washing system for garments. 3,827,262, Cl. 68-3.00r.
Marathon Oil Company: *See—*
NOrton, Charles J.; Falk, David O.; and Evans, Robert E., 3,827,499.
Schroeder, Donald E., 3,827,496.
Mare, Ernest. Scrubbing apparatus and method. 3,827,216, Cl. 55-95.000.
Maremont Corporation: *See—*
Pray, Lester W.; and Anderson, Gordon C., 3,827,227.
Mark, Fritz: *See—*
Oesterle, Helmut; Mark, Fritz; and Jochum, Peter, 3,827,618.
Markham, Orvil A. Routing guide. 3,827,468, Cl. 144-136.00r.
Markind, Joseph: *See—*
Stana, Regis R.; and Markind, Joseph, 3,827,976.
Marrie, Paul, to Societe Anonyme dite "ETUD". Electric coffee mill. 3,827,640, Cl. 241-100.000.
Marsan, Arthur E. Disposable ostomy pouch with variable means. 3,827,435, Cl. 128-283.000.
Martin, Elliott E., Jr.: *See—*
Haller, Henry E., Jr.; Huettner, Henry F.; and Martin, Elliott E., Jr., 3,827,537.
Martin, Gilbert E. Table for use with traverse power tool. 3,827,326, Cl. 83-468.000.
Martin, Jerry Roy: *See—*
Tadanier, John Soloman; and Martin, Jerry Roy, 3,828,022.
Martin, John; and Johnson, Francis, to Dow Chemical Company, The. Method of preparing 1, 5-disubstituted-2-nitroimidazoles. 3,828,064, Cl. 260-309.000.
Martin, Peter G.: *See—*
Heitman, Richard E.; Arciprete, Genio R.; Martin, Peter G.; Norris, Richard C.; and Brisk, Richard A., 3,828,323.
Martinez, Enrique Ramon: *See—*
Celada, Juan; Pena, Jesus Maria; MacKay, Patrick W.; de la Pena, Ramon; Martinez, Enrique Ramon; and de la Torre, Maria Teresa, 3,827,879.
Maruyama, Isamu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,828,027.
Marx, Michael; and Edwards, John A., to Syntex (U.S.A.) Inc., mesne. Tricyclic pharmacological agents, intermediates and methods of making. 3,828,034, Cl. 260-240.0tc.
Marzocchi, Alfred; and Janetos, Nicholas S., to Owens-Corning Fiberglas Corporation. Glass fiber size. 3,827,230, Cl. 57-140.00g.
Marzolph, Herbert: *See—*
Wieden, Horst; Nogaj, Alfred; and Marzolph, Herbert, 3,828,014.
Masaki, Mitsuo; Fikui, Kiyoshi; Kita, Jyun'Ichiro; and Uchida, Izuhiko, to Ube Industries Ltd. Process for preparing lactam complexes. 3,828,028, Cl. 260-239.30r.
Maschinenfabrik B. Maier KG: *See—*
Grube, Werner; Rutz, Karl-Friedrich; Jung, Berthold; and Schrage, Johannes, 3,827,643.
Maschinenfabrik Flums AG.: *See—*
Matzinger, August, 3,827,213.
Maschinenfabrik Hasenclever GmbH: *See—*
Suttan, Franz; Veit, Paul; and Rauber, Oskar, 3,827,275.
Maschio, Gabriele: *See—*
Priaroggia, Paolo G.; and Maschio, Gabriele, 3,828,114.
Mash, Dmitry Matveevich: *See—*
Schedrovitsky, Savely Solomonovich; Mash, Dmitry Matveevich; Golovko, Zoya Ivanovna; Goncharevich, Leonid Fomich; Lebedev, Alexei Pavlovich; Dubrovin, Jury Mikhailovich; and Suut, Nikolai Karlovich, 3,828,339.
Mason, John B.: *See—*
Kuhl, Bernard A.; and Mason, John B., 3,827,518.
Mason, Lawrence J., to Xerox Corporation. Flash lamp circuit. 3,828,222, Cl. 315-241.00p.
Massa Corporation: *See—*
Massa, Donald P., 3,828,336.
Massa, Donald P., to Massa Corporation. Intrusion alarm system with improved air turbulence compensation. 3,828,336, Cl. 340-258.00a.
Massachusetts Institute of Technology: *See—*
Haldeman, Charles W., 3,827,953.
Shannon, Daniel C., 3,827,433.
Massonnet, Henry. Molding presses. 3,827,848, Cl. 425-406.000.
Mast, Aquila D.: *See—*
Blanshine, Allison W.; Crane, Jack W.; and Mast, Aquila D., 3,827,223.
Masuda, Kazuo: *See—*
Sugimoto, Kaname; Hirao, Mamoru; and Masuda, Kazuo, 3,827,940.
Masuda, Takao: *See—*
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Masui, Hiroaki: *See—*
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Mathisen, Henry A.: *See—*
Shelffo, Loren E.; and Mathisen, Henry A., 3,827,803.
Matsumura, Kenneth N. Method and device of artificial endocrine pancreas. 3,827,565, Cl. 210-22.000.
Matsuo, Masaharu. Belt conveyor for sheet material. 3,827,548, Cl. 198-184.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Amagami, Keizo; Tsugeki, Toshii; Ogo, Yasuo; Mitani, Yoshinori; Ueda, Hiromutsu; Nishida, Takeo; and Ono, Atsuo, 3,828,163.
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Matsushita Electric Industrial Company, Limited: *See—*
Kobayasi, Hiroyuki, 3,827,399.

Matsushita, Kazuo; Nishizawa, Koichi; and Toyama, Minoru, to Nippon Selfoc Co., Ltd. Glass lens having reduced chromatic aberration and refractive index gradient. 3,827,785, Cl. 350-175.0gn.

Matthews, Gary B., to Minnesota Mining and Manufacturing Company. Threadless fastener system. 3,827,125, Cl. 29-200.00d.

Matthews, Rofe Arthur, to AE & CI Limited. Presses. 3,827,845, Cl. 425-346.000.

Matts, George Arthur: *See—*
Clarke, Ternece James Leonard; Quarmby, Robert Charles; and Matts, George Arthur, 3,827,464.

Matula, Jerry, to Pertec Corporation. Rotational position sensor. 3,828,188, Cl. 250-231.0se.

Matzinger, August, to Maschinenfabrik Flums AG. Apparatus for packaging synthetic-resin scraps. 3,827,213, Cl. 53-124.00e.

Max, Jacques; and Kofman, Wlodzimierz, to Commissariat a l'Energie Atomique. Device for estimating the value of the ambiguity function. 3,827,629, Cl. 235-150.530.

May & Baker Limited: *See—*
Broad, David Rex; Hatton, Leslie Roy; and Parnell, Edgar William, 3,828,001.

May, Peter John: *See—*
Phillipps, Gordon Hanley; and May, Peter John, 3,828,080.

Mayer, Fritz, to Freudenberg, Carl. Covering for rolls of textile machines. 3,827,120, Cl. 29-129.000.

Mayer, Udo: *See—*
Baumann, Hans; and Mayer, Udo, 3,828,035.
Kast, Helmut; Baumann, Hans; Mayer, Udo; and Oberlinner, Andreas, 3,828,071.

Mazepa, Robert, to Rockwell International Corporation. Power tool. 3,827,510, Cl. 173-163.000.

Mazzei, Alessandro: *See—*
Roggero, Arnaldo; Mazzei, Alessandro; and Proni, Antonio, 3,828,011.

McAlpin, Courtenay W.: *See—*
Greer, William S., 3,828,160.

McCalvey, Leo Francis, to International Research & Development Company. Transducer systems for detection of relative displacement. 3,827,291, Cl. 73-88.50r.

McCarthy, Jack N.: *See—*
Nelson, Edwin G., 3,827,161.

McCauley, James W., to United States of America, Army. Mica based, ceramic composite material. 3,827,892, Cl. 106-46.000.

McCawley, Frank X.; Wyche, Charlie; and Schlain, David, to United States of America, Interior. Electrodeposition of metallic boride coatings. 3,827,954, Cl. 204-39.000.

McCloud, Robert D., to Container Corporation of America. Easy packing deep container. 3,827,622, Cl. 229-37.00r.

McConaughey, Randall T.: *See—*
United States of America, National Aeronautics and Space Administration, 3,827,807.

McFarlin, Ralph M., to Esquire, Inc. Apparatus for holding parts between which wiring is to extend in selected pivotal positions with respect to one another. 3,827,735, Cl. 403-113.000.

McGinniss, Vincent Daniel, to SCM Corporation. Photopolymerizable pigmented vehicles containing chlorosulfonated or α-haloalkylated benzanthrone initiators. 3,827,956, Cl. 204-159.230.

McGinniss, Vincent Daniel, to SCM Corporation. Photopolymerizable pigmented vehicles containing chlorosulfonated or/α-haloalkylated polynuclear ketone initiators. 3,827,957, Cl. 204-159.230.

McGinniss, Vincent Daniel, to SCM Corporation. Photopolymerizable pigmented vehicles containing chlorosulfonated or α-haloalkylated fluorenone initiators. 3,827,958, Cl. 204-159.230.

McGinniss, Vincent Daniel, to SCM Corporation. Process for photopolymerization with carbonylated phenyl nuclear sulfonyl chloride sensitizer. 3,827,959, Cl. 204-159.240.

McGinniss, Vincent Daniel, to SCM Corporation. Process for photopolymerization with carbonylated polynuclear sulfonyl chloride sensitizers. 3,827,960, Cl. 204-159.240.

McGowen, Harold E., Jr.: *See—*
Moore, Howard H., Jr.; and McGowen, Harold E., Jr., 3,827,490.

McGowen Harold E., Jr. Apparatus for installing and removing flow valves. 3,827,489, Cl. 166-117.500.

McGraw-Edison Company: *See—*
Urani, Angelo, 3,828,291.

McKeron, Charles E.: *See—*
Caywood, James A.; McKeron, Charles E.; and Smith, Willard G., 3,827,336.

McKillip, William J.: *See—*
Throckmorton, Peter E.; McKillip, William J.; and Slagel, Robert C., 3,828,007.

McNeight, David L.; and Morris, William John, to Scragg, Ernest & Sons Limited. Textile apparatus. 3,827,228, Cl. 57-77.450.

McNeil Corporation: *See—*
Pamer, Karl A., 3,827,366.

McNeil Laboratories, Inc.: *See—*
Meschino, Joseph A., 3,828,096.

McPhee, Walter J.; and Sondergard, Richard D., to Bendix Corporation, The. TV area correlation tracker. 3,828,122, Cl. 178-6.800.

McVoy, Robert A.; and O'Connor, Ronald R., to Polaroid Corporation. Identification cards. 3,827,726, Cl. 283-7.000.

McWilliams, Joseph E., to Method and apparatus for loading bagged mail from a loading dock into a highway vehicle. . 3,827,585, Cl. 214-41.000.

Meacham, George B. K., to Eaton Corporation. Timing control system. 3,827,413, Cl. 123-99.000.

Mead, Mitchell F.; and Drollinger, Ralph A. Adjustable fit pack frame. 3,827,612, Cl. 224-25.00a.

Measurex Corporation: *See—*
Dahlin, Erik B.; and Hill, Robert C., 3,828,190.

Mecklenborg, Richard A., to Singer Company, The. Optical panoramic projection apparatus. 3,827,791, Cl. 352-69.000.

Meckler, Gershon. Lighting fixture. 3,828,180, Cl. 240-9.00a.

Meeker, Brian Lee: *See—*
Smalley, Rodney Roger; Staudinger, John Vendel; Smith, Harvell Morton; and Meeker, Brian Lee, 3,827,210.

Meier, Dale J.; and Kruka, Vitold R., to Shell Oil Company. Method and composition for reducing the frictional drag of flowing fluids. 3,827,447, Cl. 137-13.000.

Meier, Werner: *See—*
Furst, Andor; Labler, Ludwig; Meier, Werner; Muller, Peter; Scott, John William; and Widmer, Erich, 3,828,062.

Meinert, Leo L.: *See—*
Rymarchyk, Nicholas M.; and Meinert, Leo L., 3,827,632.

Meissner, Helmuth E.; and Stookey, Stanley D., to Corning Glass Works. Silicate bodies. 3,827,893, Cl. 106-74.000.

Melpolder, Frank W.; Guetens, Edward G.; and Mameniskis, Walter A., to Atlantic Richfield Company. Purification of 3,5-xylenol by extractive distillation. 3,827,947, Cl. 203-64.000.

Melude S.A.: *See—*
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Memory-Plastic Gunter Wengel: *See—*
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Mengel, Klaus: *See—*
Keislich, Klaus; Kerb, Ulrich; Mengel, Klaus; and Domenico, Amadeo, 3,828,083.

Menzel, Ramon, to Laser Alignment, Inc. Method and apparatus for laying a pipeline. 3,827,155, Cl. 33-228.000.

Meraikib, Mohammed: *See—*
Wenzel, Werner; Meraikib, Mohammed; Franke, Friedrich H.; and Konig, Horst, 3,827,878.

Mercier, Jacques H. Method of forming a locking ring for pressure vessle. 3,827,133, Cl. 29-445.000.

Merck & Co., Inc.: *See—*
Beattie, Thomas R.; Ruyle, William V.; Shen, Tsung-Ying; Walford, Gordon L.; and Walton, Edward, 3,828,021.
Mrozik, Helmut H., 3,828,078.
Mrozik, Helmut H., 3,828,079.
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Merck Sharp & Dohme (I.A.) Corporation: *See—*
Wasson, Burton Kendall; and Rooney, Clarence Stanley, 3,828,076.

Meridian Industries, Inc.: *See—*
Bolinger, John F.; and Leathem, Douglas B., 3,827,540.

Mershon, Butler A.; and Wilhelm, Keith A., to Lockheed Aircraft Corporation. Joggling tool. 3,827,278, Cl. 72-430.000.

Meschino, Joseph A., to McNeil Laboratories, Inc. 2-Alkoxycarbonyl-3-aryl-propylamines. 3,828,096, Cl. 260-471.00a.

Mesley, Nimrod N.: *See—*
Ameen, Thomas J.; and Mesley, Nimrod N., 3,827,918.

Messrs. Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Makino, Takayuki; Ishii, Shinya; and Ohkubo, Rokuji, 3,827,415.

Method and apparatus for loading bagged mail from a loading dock into a highway vehicle: *See—*
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Mette, Klaus-Hermann, to Graphica Precision Works Ltd. Cleaning process sequence controller. 3,828,317, Cl. 340-172.500.

Meyer, Marvin C. Golf bag bicycle rack. 3,827,613, Cl. 224-40.000.

Meyer, Richard C., 30% interest to Petersen, Arne J. and 30% interest to Deardorff, Harold F. Animal training device. 3,827,403, Cl. 119-29.000.

Meyer, Roth & Pastor: *See—*
Klaus, Jacobs, 3,827,323.

Meyer, Rudolf: *See—*
Wick, Richard; Meyer, Rudolf; and Hoffmann, Klaus, 3,828,355.

Meyerhoefer, Carl E.; and Naples, Richard J., to General Signal Corporation. Habger device for portable mixers. 3,827,677, Cl. 259-104.000.

Michael, Anthony Dennis: *See—*
Lloyd, Kenneth; and Michael, Anthony Dennis, 3,827,882.

Mih, Li C.: *See—*
Wilson, Raymond F.; Peck, Reese A.; and Mih, Li C., 3,827,969.

Mika, Norbert; Schuldreich, Rudolf; and Berger, Helmut, to Siemens Aktiengesellschaft. X-ray photographing device. 3,828,196, Cl. 250-468.000.

Miklas, Edward J., to Petro-Tex Chemical Corporation. Method of preparation of ferrite catalysts. 3,828,101, Cl. 423-594.000.

Mila, Truman R., to GTE Automatic Electric Laboratories Incorporated. Method and arrangement for protecting correed matrix contacts. 3,828,315, Cl. 340-166.00s.

Miles Laboratories, Inc.: *See—*
Janik, Alice Marie, 3,827,942.

Miles, Leon H.; and King, Graham E., to Atlantic Richfield Company. Composition for inhibiting scale formation in oil well brines. 3,827,977, Cl. 252-8.55b.

Miles, Leon H., to Atlantic Richfield Company. Packer fluid for drilling and completing a well. 3,827,978, Cl. 252-8.55b.

Millard, Richard J.; and Poat, David R., to Sprague Electric Company. Solid tantalum capacitor with end cap terminals. 3,828,227, Cl. 317-230.000.

Miller, Albert J., to Bike Alarm, Ltd. Bicycle theft alarm. 3,828,310, Cl. 340-65.000.

Miller, Dennis D.; and Karr, Jerry W., to Harmon Industries, Inc. Safety chain attachment for roof-mounted trailer hitch. 3,827,722, Cl. 280-432.000.

Miller, Gary E., to Arco Nuclear Company, mesne. Method of producing sheets and article to practice such method. 3,827,264, Cl. 72-46.000.

Miller, Harmon B., to Reclosable Package Corp. Reclosable package and controlled release paper for use therein. 3,827,625, Cl. 229-62.000.

Miller, Henry C.: *See—*
Duggins, Ray B.; Miller, Henry C.; and Vassiliou, Eustachios, 3,827,933.

Miller, Melvin N.; Levine, Marshall S.; and Partin, Melvin E., to Geometric Data Corporation. Color separation for descrimination in pattern recognition systems. 3,827,804, Cl. 356-39.000.

Miller Printing Machinery Co.: *See—*
Luffy, Dennis J.; and Mosemiller, Robert L., 3,827,688.

Miller, Robert L.; and Fisset, Louis M., to Ex-Cell-O Corporation. Tooth forming tool. 3,827,280, Cl. 72-469.000.

Milliman, Pierce D. Wheeled skis. 3,827,706, Cl. 280-11.1bt.

Millmaster Onyx Corporation: *See—*
Adams, Phillip; and Petrocci, Alfonso N., 3,827,874.

Milton, Richard D.: *See—*
Otto, William F.; and Milton, Richard D., 3,828,277.

Miner, Robert C.: *See—*
Knapp, William H.; Kesl, Elmer M.; and Miner, Robert C., 3,827,816.

Minich, Paul R., Jr.; and Jensen, Thorkild. Collapsible overhead guard. 3,827,532, Cl. 187-9.000.

Minick, David G., to Sinclair Company, The. Method of seaming wire cloth. 3,828,157, Cl. 219-67.000.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. N-(indazolyly-N^1-methyl)dialkanolamines. 3,828,067, Cl. 260-310.00c.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. [(Substituted indazolyl)-N^1-methyl] carbamates. 3,828,068, Cl. 260-310.00c.

Minnesota Mining and Manufacturing Company: *See—*
Matthews, Gary B., 3,827,125.
Vogelgesang, Peter J.; Alexander, Jerry L.; and Lunquist, Frank C., 3,828,359.

Minolta Camera Kabushiki Kaisha: *See—*
Kono, Tateomi, 3,827,687.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,827,800.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,827,801.

Mitani, Yoshinori: *See—*
Amagami, Keizo; Tsugeki, Toshii; Ogo, Yasuo; Mitani, Yoshinori; Ueda, Hiromutsu; Nishida, Takeo; and Ono, Atsuo, 3,828,163.

Mitchell, Harry Ian; and Tomlinson, Kenneth, to Colgate-Polmolive Company. Method and compositions for cleaning ovens and the like. 3,827,983, Cl. 252-89.000.

Mitchell, Wallace F., to Ammco Tools, Inc. Brake shoe gage. 3,827,153, Cl. 33-178.00r.

Mitchell, William E., to Dunlop Limited. Wheels. 3,827,756, Cl. 301-63.00r.

Mitsubishi Rayon Company Limited: *See—*
Orito, Zen-Ichi; Sugimoto, Hiroshi; Uchida, Minoru; Sahara, Hajime; Takesue, Masatoshi; and Nishida, Kiyoharu, 3,827,932.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Moriguchi, Shigeru; Tamura, Mitsuo; and Saito, Yuzi, 3,827,190.
Shiozawa, Kaoru; Shirato, Tsugio; and Hirose, Kiyoshi, 3,827,126.
Soma, Hisashi, 3,827,385.

Mitsumura, Yoshio: *See—*
Higuchi, Yasuo; and Mitsumura, Yoshio, 3,827,835.

Miwa, Hiroshi: *See—*
Yokoyama, Kanji; and Miwa, Hiroshi, 3,828,285.

Miyaoka, Senri, to Sony Corporation. Exposure apparatus for the direct photographic production of a phosphor screen on the faceplate of a color picture tube. 3,828,358, Cl. 354-1.000.

Miyoshi, Seizo, to Matsushita Electric Industrial Co., Ltd. Automatic record player. 3,827,697, Cl. 274-10.00r.

Mizoguchi, Katsuhiro: *See—*
Shinohara, Isao; Tsuchida, Eishun; and Mizoguchi, Katsuhiro, 3,828,008.

Mizuko, Kiyoo: *See—*
Nakayama, Norihiko; Osawa, Mitsuoki; Mizuko, Kiyoo; and Takahashi, Isao, 3,827,776.

Mizuta, Hiroyuki: *See—*
Kinugasa, Hiroaki; Tsukamoto, Masatoshi; Mizuta, Hiroyuki; and Uno, Hitoshi, 3,828,030.

Mobil Oil Corporation: *See—*
Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., 3,827,968.
Givens, Wyatt W., 3,828,189.
Heinemann, Heinz; and Weisz, Paul B., 3,827,867.
Piotrowski, Alfred B.; and Andress, Harry J., Jr., 3,827,979.
Strong, Jerry G., 3,828,091.

Mobius, T. Paul, Firma: *See—*
Mobius, Werner, 3,827,469.

Mobius, Werner, to Mobius, T. Paul, Firma. Pencil sharpener. 3,827,469, Cl. 145-3.300.

Moebius, Kurt O. Constrictor ring and tube joint. 3,827,727, Cl. 285-27.000.

Moen, Walter B.; and Spies, George R., to Airco, Inc. Pressure control system for cryogenic fluids. 3,827,246, Cl. 62-50.000.

Moeser, Alan. Counting cube. 3,827,162, Cl. 35-32.000.

Molchanov, Boris Vladimirovich: *See—*
Samoilov, Sergei Mikhailovich; Ivanov, Vladimir Ivanovich; Zambrovskaya, Galina Vladimirovna; Tsvetkov, Oleg Nikolaevich; Monastyrsky, Viktor Nikolaevich; Bespalov, Evgeny Ivanovich; Gryaznov, Boris Vasilievich; and Molchanov, Boris Vladimirovich, 3,828,01.

Molho, Darius: *See—*
Boschetti, Eugene; Molho, Darius; and Fontaine, Louis, 3,828,095.

Molner, Stanley F.; and Newman, Joel S., to Biometrics, Inc. Monitoring devices. 3,827,789, Cl. 351-23.000.

Monarch Logging Company, Inc.: *See—*
Rochon, Robert W.; and Sneed, Joe W., 3,827,295.

Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Sr., 3,827,355.

Monastyrsky, Viktor Nikolaevich: *See—*
Samoilov, Sergei Mikhailovich; Ivanov, Vladimir Ivanovich; Zambrovskaya, Galina Vladimirovna; Tsvetkov, Oleg Nikolaevich; Monastyrsky, Viktor Nikolaevich; Bespalov, Evgeny Ivanovich; Gryaznov, Boris Vasilievich; and Molchanov, Boris Vladimirovich, 3,828,01.

Monford, Leo G., Jr., to United States of America, National Aeronautics and Space Administration. Digital communication system. 3,828,137, Cl. 179-15.0at.

Monroe Belgium N.V.: *See—*
Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., 3,827,539.

Monsanto Company: *See—*
Bergomi, Joseph G., Jr., 3,827,997.

Moody Matthew, Limited: *See—*
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Mooney, Thomas: *See—*
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Moore, George E.: *See—*
Harvey, Richard F.; and Moore, George E., 3,827,923.

Moore, Harold H., Jr.: *See—*
Moore, Howard H., Jr.; and McGowen, Harold E., Jr., 3,827,490.

Moore, Howard H., Jr.; and McGowen, Harold E., Jr., to McGowen, Harold E., Jr. and Moore, Harold H., Jr. Apparatus for installing and removing flow valves. 3,827,490, Cl. 166-117.500.

Moore, Robert R. Adjustable strap assembly. 3,827,107, Cl. 24-16.00r.

Moore, Ronald Leslie; and Mace, Dennis Geoffrey Wallace, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for the Environment in Her Britannic Majesty's Government of the. Apparatus for controlling the intensity of vehicle headlaps. 3,828,220, Cl. 315-82.000.

Moore, Samuel & Company: *See—*
Johanson, Hans A.; Whittaker, Dewey E.; and Phillippi, Larry R., 3,828,112.

Moorman Manufacturing Company: *See—*
Kurk, Kenneth G.; and Kilbride, Robert S., 3,827,577.

Morez, Eugene S., to Chicago Musical Instrument Co. Chorus generator for electronic musical instrument. 3,828,109, Cl. 84-1.010.

Morfit, Oliver: *See—*
Godino, Rino L.; and Morfit, Oliver, 3,827,944.

Morgan, Edgar A., to Arrow Development Co., Inc. Boat construction for amusement park use. 3,827,387, Cl. 114-219.000.

Morgan, Frank S. Shock absorbers. 3,827,538, Cl. 188-319.000.

Morgan, Paul Winthrop, to Du Pont de Nemours, E. I., and Company. Anisotropic dopes of polyamides in concentrated sulfuric acid. 3,827,998, Cl. 260-30.80r.

Morgat, Jean-Louis: *See—*
Fromageot, Pierre; Hung, Lam Thanh; and Morgat, Jean-Louis, 3,828,102.

Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Quantized indication arrangement. 3,828,253, Cl. 324-99.00d.

Mori, Gian Luigi. Perpetual calendar, operated by a magnet. 3,827,168, Cl. 40-110.000.

Mori, Kazuo: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,828,027.

Moriguchi, Shigeru; Tamura, Mitsuo; and Saito, Yuzi, to Mitsui Shipbuilding and Engineering Co., Ltd. Pipe cutting machine with spark actuated feed control. 3,827,190, Cl. 51-98.00r.

Morisaki, Nobukazu, to Daido Metal Company. Tin based white metal bearing alloys producing good bond with backing material. 3,827,884, Cl. 75-175.00a.

Morita, Yasuyuki, to Toyo Kogyo Company Limited. Cold starting device for use in an internal combustion engine. 3,827,417, Cl. 123-127.000.

Morris, Herbert R.: *See—*
MacMaster, Malcolm D.; and Morris, Herbert R., 3,827,254.

Morris, Philip, Incorporated: *See—*
Braginetz, Paul A., 3,827,597.

Morris, William John: *See—*
McNeight, David L.; and Morris, William John, 3,827,228.

Morrison, Howard J.; and Allen, Robert K., to Glass, Marvin, & Associates. Magnetic type game. 3,827,692, Cl. 273-85.00f.

Morsell, Arthur Lee: *See—*
Eseke, James Richard; Morsell, Arthur Lee; Muntz, Eric Phillip; and Welkowsky, Murray Samuel, 3,828,191.

Morsell, Arthur Lee, to Xonics, Inc. Spherical segment electrode imaging chamber. 3,828,192, Cl. 250-315.000.

Morton, Michael S. J. Aquarium filter. 3,827,560, Cl. 210-169.000.

Mosemiller, Robert L.: *See—*
Luffy, Dennis J.; and Mosemiller, Robert L., 3,827,688.

Mosetti, Jacques: *See—*
Doniat, Den[illegible]; Porta, Augusto; and Mosetti, Jacques, 3,827,961.

Mosier, John E.; and Stephenson, Jack G., to Halliburton Company. Method and apparatus for providing coupling train action and alignment control for railway vehicles. 3,827,575, Cl. 213-8.000.

Motor Wheel Corporation: *See—*
Hubbard, Harold C.; and Strbik, Joseph J., 3,828,150.

Motorola, Inc.: *See—*
Livenick, Corwin E.; Malinowski, Stanley; and Vann, Robert D., 3,828,210.
Rees, Lynn T., 3,828,278.

Mouneydiere, Robert, to Creusot-Loire. Articulated railway truck. 3,827,373, Cl. 105-182.00r.

Movalarm Limited: *See—*
Fagan, Donald Frederick; and Hale, Rodney Barker, 3,828,125.

Mrozik, Helmut H., to Merck & Co., Inc. 4-Amino-3-(halo, nitro or trifluoromethyl)-5-trifluoromethyl benzenesulfonamides. 3,828,078, Cl. 260-397.70r.

Mrozik, Helmut H., to Merck & Co. Inc. 4-Amino-3,5-(trifluoromethyl or bromo) benzene sulfonamides. 3,828,079, Cl. 260-397.70r.

Mueller, Harry B. Wheelbarrow having spherical wheel. 3,827,369, Cl. 104-118.000.

Mueller, James F., to Eaton Corporation. Clutch means for a 4 X 4 drive transfer vehicle. 3,827,520, Cl. 180-44.00r.

Mueller, Manfred: *See—*
Arndt, Peter Joseph; Blitz, Hans-Dieter; Huebner, Klaus; Krall, Wilhelm; Kurth, Hans-Joachim; Mueller, Manfred; and Pennewiss, Horst, 3,828,012.

Muenchinger, Herman G., to Research Engineering & Manufacturing, Inc. Self-extruding screw. 3,827,331, Cl. 85-41.000.

Mulder, Herman; Van Pol, Jan Huibert Leonard Philomena; and Hakkeling, Berend. Device comprising at least one rake member adapted to rotate about an upwardly extending axis. 3,827,224, Cl. 56-370.000.

Mullender, Claude: *See—*
Frey, Walter C.; Mullender, Claude; and Reinhart, Norman E., 3,827,844.

Muller, Alf, to Daimler-Benz Aktiengesellschaft. Front wheel suspension for a passenger motor vehicle. 3,827,711, Cl. 280-96.20b.

Muller, George H.: *See—*
Howell, Carl A.; and Muller, George H., 3,827,741.

Muller, Peter: *See—*
Furst, Andor; Labler, Ludwig; Meier, Werner; Muller, Peter; Scott, John William; and Widmer, Erich, 3,828,062.

Multi-Contact AG: *See—*
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Multi-State Devices Ltd.: *See—*
Grossman, David H.; and Plough, Charles T., 3,828,292.

Munro, Roger Cameron: *See—*
Bond, Kenneth Arthur George; Munro, Roger Cameron; and Hayler, Reginald, 3,827,286.

Muntz, Eric Phillip: *See—*
Eseke, James Richard; Morsell, Arthur Lee; Muntz, Eric Phillip; and Welkowsky, Murray Samuel, 3,828,191.

Murray Corporation: *See—*
Kish, Arthur S., 3,827,255.

Murray, John S., Jr., to Hughes Aircraft Company. System for minimizing multiple time around echos in a coherent-on-receive-doppler radar. 3,828,348, Cl. 343-7.00a.

Muskateer Corporation: *See—*
Cellesta, Jerry J., 3,827,462.

Myers, John H.: *See—*
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Nadaskay,Richard J.: *See—*
Baxter, Robert O.; Byars, Carl A.; Nadaskay,Richard J.; and Roark, Lamar P., 3,827,614.

Nagai, Tamiji; and Sahara, Hiroshi, to Sony Corporation. High DC voltage generating circuit. 3,828,239, Cl. 321-2.000.

Naill, David W. Decoding instrument for a pin-type tumbler lock. 3,827,151, Cl. 33-174.00f.

Naito, Shun-Ichi. Aminoethanesulfonyl derivatives and their production. 3,828,070, Cl. 260-326.12r.

Najjar, Edward G.: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,827,994.

Nakagawa, Masaya: *See—*
Oguni, Hiroshi; and Nakagawa, Masaya, 3,827,338.

Nakamura, Tadahiko; and Tanaka, Yoshinori, to Sony Corporation. Numerical data input apparatus. 3,828,174, Cl. 235-156.000.

Nakanishi, Michio; Tahara, Tetsuya; Araki, Kazuhiko; and Shiroki, Masami, to Yoshitomi Pharmaceutical Industries, Ltd. 2-Aminothieno (2,3-e) (1,4) diazepine compounds. 3,828,039, Cl. 260-247.100.

Nakayama, Norihiko; Osawa, Mitsuoki; Mizuko, Kiyoo; and Takahashi, Isao, to Fujitsu Limited. Method of fabricating a gas discharge display device having an alkali metal atomic layer. 3,827,776, Cl. 316-20.000.

Nakich, Robert B.: *See—*
United States of America, National Aeronautics and Space Administration, 3,827,288.

Nap, Cornelis; Van Haarlem, Adriaan; and Ruempol, Emile O. H. M., to Shell Oil Company. Thermal cracking of hydrocarbons. 3,827,967, Cl. 208-48.00r.

Naples, Richard J.: *See—*
Meyerhoefer, Carl E.; and Naples, Richard J., 3,827,677.

Nara, Kaoru: *See—*
Takahashi, Kentaro; Hasegawa, Minoru; and Nara, Kaoru, 3,827,863.

Nash, Paul. Circuits for deriving a common output signal from a plurality of amplifiers in apparatus for detecting blemishes in sheet material. 3,827,809, Cl. 356-200.000.

Nasica, Jean R., to Intercan S.A. Method for producing containers with composite walls. 3,827,128, Cl. 29-421.000.

National State Bank, The, mesne: *See—*
Pilat, Peter, 3,827,546.

National Valve and Manufacturing Company: *See—*
Haller, Henry E., Jr.; Huettner, Henry F.; and Martin, Elliott E., Jr., 3,827,537.

Naumann, Wilhelm, to Firma PMD Entwicklungswerk fur Kunstsoff-Maschinen GmbH & Co. KG. Blowing- and filling thorn. 3,827,214, Cl. 53-191.000.

Needham, James Christopher; Ellis, Colin Ronald George; and Lilly, Rodger Hedley, to Welding Institute, The. Friction welding method. 3,827,138, Cl. 29-470.300.

Needham, Victor, to Lucas Aerospace Limited. Sputtering apparatus. 3,827,966, Cl. 204-298.000.

Neely, Lloyd F., to Mallory, P. R., & Co. Inc. Electrical contact material. 3,827,883, Cl. 75-153.000.

Neff, Charles G.; and Beebe, William F., to Holland Hitch Company. Dolly for tractor trailers. 3,827,723, Cl. 280-476.00r.

Neidecker, Rudolf, to Multi-Contact AG. Plug connector for electrically interconnecting orthogonal conductors. 3,828,301, Cl. 339-75.00m.

Neilsen, Hildaur L. Deburring devices. 3,827,270, Cl. 72-199.000.

Nelson, Edwin G., 10% to Harris, John Madison and 10% to McCarthy, Jack N. Educational mathematical device. 3,827,161, Cl. 35-31.00a.

Nelson, Lloyd A., to Gerber Products Company. Method and apparatus for detecting partially-filled or absent containers in a sealed shipping carton. 3,828,193, Cl. 250-360.000.

Nelson, Lorne W., to Honeywell Inc. Combustion control apparatus. 3,827,849, Cl. 431-90.000.

Nelson Muffler Corporation: *See—*
Hansen, Joseph A., 3,827,531.

Nelson, Peter H., to Syntex Corporation. Process for preparing 2-(6-methoxy-2-naphthyl) propionic acid and intermediates therefor. 3,828,033, Cl. 260-240.00r.

New, George William, to British Titan Limited. Process and apparatus for varying the position of the arc root in a plasma arc suitable for producing titanium dioxide pigments. 3,828,223, Cl. 315-267.000.

Newfeld, Stewart M.: *See—*
Carter, Charles H., Jr.; and Newfeld, Stewart M., 3,828,341.

Newman, Joel S.: *See—*
Molner, Stanley F.; and Newman, Joel S., 3,827,789.

Newman, Walter: *See—*
Johnson, George E.; and Newman, Walter, 3,828,299.

Nicholls, Augustus H. Dual tubular dispensing device. 3,827,602, Cl. 222-137.000.

Niehaus, Wolfgang: *See—*
Fischer, Karl; and Niehaus, Wolfgang, 3,828,164.

Nield, Eric, to Imperial Chemical Industries Limited. Chemical process for preparing odorless taste-free acrylonitile/aromatic olefin copolymers. 3,828,013, Cl. 260-85.50r.

Nielsen, Leroy C., to Eastman Kodak Company. Elevator mechanism for reducing web tension and controlling elevator descent. 3,827,646, Cl. 242-55.010.

Nielsen, Ole Bent Tvarmose: *See—*
Feit, Peter Werner; and Nielsen, Ole Bent Tvarmose, 3,828,059.

Niem, Wolfgang: *See—*
Baanstra, Theo Meindert; Von Hagen, Wolf-Rudiger; and Niem, Wolfgang, 3,827,381.

Nierle, Pierre. Three dimensional construction. 3,827,206, Cl. 52-648.000.

Nippon Electric Company, Limited: *See—*
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Nishio, Tomoyuki, 3,828,268.
Ochiai, Kazuo; Araseki, Takashi; and Kato, Yasuo, 3,828,147.
Shinohara, Isao; Tsuchida, Eishun; and Mizoguchi, Katsuhiro, 3,828,008.

Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tsuyoshi, 3,827,140.

Nippon Oils and Fats Company Limited: *See—*
Yamazaki, Shingo; Takemura, Akira; Kojima, Kazumi; Nishimura, Masato; Tsuchida, Teruo; and Yonemoto, Tadashi, 3,828,003.

Nippon Petrochemicals Co., Ltd.: *See—*

Sato, Atsushi, 3,827,302.
Nippon Piston Ring Co., Ltd.: *See—*
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Nippon Selfoc Co., Ltd.: *See—*
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Nippon Steel Chemical Co., Ltd.: *See—*
Kusunoki, Yasuo; and Okasaki, Hiroshi, 3,828,051.
Nippon Steel Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nishida, Kiyoharu: *See—*
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Nishikawa, Atsuro: *See—*
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Nishimura, Masato: *See—*
Yamazaki, Shingo; Takemura, Akira; Kojima, Kazumi; Nishimura, Masato; Tsuchida, Teruo; and Yonemoto, Tadashi, 3,828,003.
Nishio, Tomoyuki, to Nippon Electric Company, Limited. Differential amplifier having increased bandwidth. 3,828,268, Cl. 330-30.00d.
Nishizawa, Jun-Ichi; and Terasaki, Takeshi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Field effect semiconductor device having an unsaturated triode vacuum tube characteristic. 3,828,230, Cl. 357-22.000.
Nishizawa, Koichi: *See—*
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Nissan Motor Company, Limited: *See—*
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Nissin Shokuhin Kaisha, Ltd.: *See—*
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Nittetu Chemical Engineering Ltd.: *See—*
Tsuruta, Hidemasa; and Makiguchi, Michinori, 3,827,379.
Nixon, Philip Sidney, to Pilkington Brothers Limited. Glass sheet conveying apparatus. 3,827,547, Cl. 198-127.00r.
Noble, Peter M., to Westinghouse Air Brake Company. Operable skate type of railway car retarder. 3,827,533, Cl. 188-62.000.
Nogaj, Alfred: *See—*
Wieden, Horst; Nogaj, Alfred; and Marzolph, Herbert, 3,828,014.
Noguchi, Junpei: *See—*
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Noguchi, Masaaki; and Kawahara, Takezo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Pipe joint assembly. 3,827,732, Cl. 285-342.000.
Nomiya, Kosei: *See—*
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Nordeen, Erwin E.; and JOhnson, Milton J., to Whirlpool Corporation. Vacuum cleaner. 3,827,103, Cl. 15-359.000.
Nordson Corporation: *See—*
Hamilton, William M.; Reighard, Alan B.; and Tamny, Simon Z., 3,827,604.
Reighard, Alan B.; Rosen, Samuel R.; Schroeder, Ronald R.; and Tamny, Simon Z., 3,827,603.
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Norob System AB: *See—*
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Norteman, Samuel L., to Wheeling-Pittsburgh Steel Corporation. Manufacture of electrical metallic tubing. 3,827,139, Cl. 29-477.700.
North American Manufacturing Company: *See—*
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North, James Clayton: *See—*
Fischer, Robert Frederick; North, James Clayton; and Wolfe, Raymond, 3,828,329.
North, Max D. Feeder device. 3,827,404, Cl. 119-51.110.
NOrton, Charles J.; Falk, David O.; and Evans, Robert E., to Marathon Oil Company. Injectivity in supplemented oil recovery. 3,827,499, Cl. 166-305.00r.
Norton Company: *See—*
Douglass, Richard W., 3,827,865.
Norton, Ralph S. Current follower amplifier. 3,828,269, Cl. 330-97.000.
Norwood Industries, Inc.: *See—*
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O'Connell, James P. Fastening means for detachably securing together mating ends of a binder ring construction and the like. 3,827,111, Cl. 24-230.0cf.
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Pray, Lester W.; and Anderson, Gordon C., to Maremont Corporation. Grasper bar pivoting and positioning. 3,827,227, Cl. 57-52.000.
Preissler, Detvel. Polygonal building structure. 3,827,200, Cl. 52-82.000.
Priaroggia, Paolo G.; and Maschio, Gabriele, to Industrie Pirelli Societa per Azioni. Synthetic resin sleeve with embedded stress control screen for high-voltage cables. 3,828,114, Cl. 174-73.00r.
Price, Alson K.; and Fenster, Abraham N., to Allied Chemical Corporation. Novel amidoamine oxides. 3,828,085, Cl. 260-404.500.
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Pugh, Billy Gene. Personnel or cargo net. 3,827,745, Cl. 294-77.000.
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Redfern, Brian A. W.: *See—*
Denham, Albert W.; and Redfern, Brian A. W., 3,827,129.
Reed, Marion G., to Chevron Research Company. Sand stabilization in selected formations. 3,827,495, Cl. 166-250.000.

Reed, Marion G., to Chevron Research Company. Formation permeability maintenance with hydroxy-aluminum solutions. 3,827,500, Cl. 166-305.00r.

Rees, Lynn T., to Motorola, Inc. Control Circuit for disabling MOS oscillator. 3,828,278, Cl. 331-116.00r.

Regie Nationale des Usines Renault: *See—*
Giordano, Jean-Louis; and Lietard, Michel, 3,827,764.
Lefeuvre, Andre, 3,827,714.
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Reighard, Alan B.: *See—*
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Reighard, Alan B.; Rosen, Samuel R.; Schroeder, Ronald R.; and Tamny, Simon Z., to Nordson Corporation. Thermoplastic applicator system in which the pump back-pressure controls the dispersing outlet. 3,827,603, Cl. 222-146.0he.

Reiling, Victor C. Jr., to Quaker Oats Company, The. Wheeled toy vehicle with cam operated oscillating chair and steering wheel. 3,827,179, Cl. 46-204.000.

Reiling, Victor G., Jr., to Quaker Oats Company, The. Toy desk. 3,827,774, Cl. 312-230.000.

Reinhart, Norman E.: *See—*
Frey, Walter C.; Mullender, Claude; and Reinhart, Norman E., 3,827,844.

Rekai, Andre, to Honeywell Inc. Temperature responsive circuit having a high frequency output signal. 3,828,332, Cl. 340-227.00r.

Rem Research, Inc.: *See—*
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Remington Arms Company Inc.: *See—*
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Rheinische Braunkohlenwerke AG.: *See—*
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Rice, Verner K.: *See—*
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Richard, Jimmy W., to Conveyor Line Products, Inc. Bean sizer and broken bean eliminator. 3,827,554, Cl. 209-96.000.

Richards, Wilfred Arthur, to Plessey Handel und Investments A.G. Artificial tooth structure. 3,827,145, Cl. 32-10.00a.

Richardson, Kenneth: *See—*
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Richdel, Inc.: *See—*
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Ricklefs, Merlin J.: *See—*
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Takahashi, Yasuhiro; and Saita, Osamu, 3,827,394.

Riethmuller, Lothar H.; Sponholz, Richard; Kiefer, Hans; and Spreitzhofer, Ernst, to Bodenseewerk Perkin-Elmer & Co. GmbH. Peak detector. 3,828,259, Cl. 328-151.000.

Rimmer, Ronald, to Dowty Fuel Systems Limited. Fluid distribution apparatus. 3,827,460, Cl. 137-809.000.

Ringley, Michael B.; and Wendelin, Pauli O., to Westvaco Corporation. Process for producing high strength, high yield hardwood pulp. 3,827,934, Cl. 162-28.000.

Ripart, Guy, to Compagnie Generale D'Electricite. Arrangement for eliminating interference reflections in a light deviating device. 3,827,787, Cl. 350-285.000.

Ritzenthaler, Richard L.: *See—*
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Roblin Industries, Inc.: *See—*
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Rochon, Robert W.; and Sneed, Joe W., to Monarch Logging Company, Inc. Bell nipple monitor. 3,827,295, Cl. 73-155.000.

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Rockwell International Corporation: *See—*
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Mazepa, Robert, 3,827,510.

Rodgers, Fletcher. Remote control hydraulic valve. 3,827,669, Cl. 251-62.000.

Roe, Richard C., to Sealy Incorporated. Wire mesh pad for mattress box springs. 3,827,090, Cl. 5-354.000.

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Roeser, John O., to Otto Engineering, Inc. Multi-position electrical switch and spring biasing means for universal-type actuator. 3,828,148, Cl. 200-6.00a.

Rogers Athletic Co., Inc.: *See—*
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Rogers, Charles H.: *See—*
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Rogers, Dayton, Manufacturing Company: *See—*
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Rogers, Orley David, to Rogers Athletic Co., Inc. Blocking sled. 3,827,690, Cl. 273-55.00r.

Roggero, Arnaldo; Mazzei, Alessandro; and Proni, Antonio, to Snam Progetti, S.p.A. Process for producing addition homo-and copolymers from episulphides. 3,828,011, Cl. 260-79.000.

Rohm GmbH: *See—*
Arndt, Peter Joseph; Blitz, Hans-Dieter; Huebner, Klaus; Krall, Wilhelm; Kurth, Hans-Joachim; Mueller, Manfred; and Pennewiss, Horst, 3,828,012.

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Rohr Industries, Inc.: *See—*
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Maison, Richard L., 3,827,364.
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Rollin, Claude: *See—*
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Romano, Aldo, to Ates Componenti Elettronici S.p.A. Low frequency power amplifier. 3,828,265, Cl. 330-17.000.

Rombach, Friedrich: *See—*
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Roob, Elwood I., to Eaton Corporation. Quick release valve. 3,827,451, Cl. 137-102.000.

Rood, Alvin A.: *See—*
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Rooney, Clarence Stanley: *See—*
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Rose, Frederick A.: *See—*
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Rosen, Karl Isac Joel. Positive thread delivery device for textile machines. 3,827,645, Cl. 242-47.120.

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Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., to Nordson Corporation. Double acting hydraulic pump. 3,827,339, Cl. 92-152.000.

Rosenbauer, Hans-Gunter: *See—*
Aignesberger, Alois; and Rosenbauer, Hans-Gunter, 3,827,992.

Rosenow, William L., to Ecology Recycling Inc. Apparatus for flattening metal cans and crushing glass containers. 3,827,351, Cl. 100-176.000.

Rosinski, Edward J.: *See—*
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Roth, Walter, to Diagnostic Instruments, Inc. Development enhancement of electrostatic images. 3,827,905, Cl. 117-17.500.

Rothwell, Ronald Edward; and Cipriani, Cipriano, to Allied Chemical Corporation. Shock-proof nylon carpet system. 3,827,931, Cl. 161-67.000.

Rowe, Donald H.: *See—*
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Rowley, James Robert: *See—*

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Roy, Milton, Company: *See—*
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Royal Industries, Inc.: *See—*
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Rucker Company, The: *See—*
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Rudel, Harry W., to Biological Concepts, Inc. Novel oral pharmaceutical dosage form. 3,828,106, Cl. 424-239.000.
Rudolph, Lois K. Brassiere construction for the handicapped. 3,827,441, Cl. 128-425.00.
Ruempol, Emile O. H. M.: *See—*
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Rupprecht, Kenneth J., to Globe Manufacturing Company. Knit yarn package. 3,827,261, Cl. 66-195.000.
Rust, Donald. Cooling systems for turbocharger mechanisms. 3,827,236, Cl. 60-13.00r.
Rutz, Karl-Friedrich: *See—*
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Ruyters, Johannes Hubertus, to Rubberfabriek "Indiana" N. V. Concrete tile. 3,827,818, Cl. 404-33.000.
Ryan, T. Claude; and Girard, Peter F., to Ryson Aviation Corporation. Aircraft wing structure and method of assembly. 3,827,661, Cl. 244-123.000.
Rymarchyk, Nicholas M.; and Meinert, Leo L., to Berry Metal Company. Fuel and oxygen lance assembly. 3,827,632, Cl. 239-132.300.
Ryson Aviation Corporation: *See—*
Ryan, T. Claude; and Girard, Peter F., 3,827,661.
Rystad, Arnold O., to Work Right Products Inc. Shower door latch. 3,827,737, Cl. 292-74.000.
Saarem, Myrl J., to Richdel, Inc. Valve assembly. 3,827,670, Cl. 251-81.000.
Sablotny, Adalbert, to Hoesch Aktiengesellschaft. Method of testing spiral-welded seam tubes. 3,828,158, Cl. 219-62.000.
Sacks, Sidney M.; Brand, Arnold J.; and Slump, William R., to Singer Company, The. Error correction for an integrating analog to digital converter. 3,828,347, Cl. 340-347.0ad.
Sageman, Frank W. Feed particulator apparatus. 3,827,642, Cl. 241-101.700.
Sahara, Hajime: *See—*
Orito, Zen-Ichi; Sugimoto, Hiroshi; Uchida, Minoru; Sahara, Hajime; Takesue, Masatoshi; and Nishida, Kiyoharu, 3,827,932.
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Sakai, Yutaka; and Kimura, Kazuya, to Matsushita Electric Industrial Co., Ltd. Timing system having a high speed and a low speed gear train. 3,828,199, Cl. 307-141.000.
Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Oil seal for use in rotary piston internal combustion engine. 3,827,701, Cl. 277-81.00p.
Sakata, Ryuichi: *See—*
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Sakurai, Katsuo; and Chofuku, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seat belt assembly for automobile or the like. 3,827,713, Cl. 280-150.0sb.
Saleck, Wilhelm; and Balle, Gerhard, to AGFA-Gevaert Aktiengesellschaft. Process for the preparation of photographic silver salt emulsions. 3,827,890, Cl. 96-114.000.
Salmet, Gaston Raoul. Radio-wave detector for discovering the movement of persons or objects in a confined space. 3,828,335, Cl. 340-258.00c.
Saltz, Fred: *See—*
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Samoilov, Sergei Mikhailovich; Ivanov, Vladimir Ivanovich; Zambrovskaya, Galina Vladimirovna; Tsvetkov, Oleg Nikolaevich; Monastyrsky, Viktor Nikolaevich; Bespalov, Evgeny Ivanovich; Gryaznov, Boris Vasilievich; and Molchanov, Boris Vladimirovich. Method fr preparing branched copolymers of ethylene with vinyl organosilicon monomers. 3,828,015, Cl. 260-88.10r.
Sanderson, Edward. Portable sanitary putrescible material collector assembly. 3,827,098, Cl. 15-104.800.
Santa Martha Bay Shipping and Trading Co. Ltd.: *See—*
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Santi, John D.: *See—*
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Sato, Akira: *See—*
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Sato, Kohei, to Matsushita Electric Industrial Co., Ltd. Regulated H.V. power supply for a television receiver. 3,828,123, Cl. 178-7.30r.
Sato, Masamichi; and Tamai, Yasuo, to Fumi Photo Film Co., Ltd. Method for developing an electrostatic latent image. 3,827,906, Cl. 117-37.01e.
Sato, Ryozi; and Ito, Yoshio, to Japanese Geon Co., Ltd., The. Process for separating methacrolein. 3,828,099, Cl. 260-601.00r.
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Saunders, Philip G.; Simpson, Jack R.; and Peer, Daniel R., to Container Graphics Corporation. Ejection member for cutting dies. 3,827,322, Cl. 83-128.000.
Saurano, Marina, to Societe Alexandre. Hairdressing composition and process for preparation thereof. 3,828,105, Cl. 424-70.000.
Sausse, Andre: *See—*
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Sawyer, Philip N.: *See—*
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Schafer, Richard A. Golf swing training device. 3,827,696, Cl. 273-183.00e.
Schafer, Ronald William: *See—*
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Scheibe, Elias W., to General Motors Corporation. Metering pump. 3,827,836, Cl. 418-88.000.
Scheinpflug, Hans: *See—*
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Schering Aktiengesellschaft: *See—*
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Schickler, Edward R., to Eastman Kodak Company. Replenishment controller for photographic processors. 3,828,172, Cl. 235-151.120.
Schiffman, Murray M., to Cambridge Research and Development Group, Greenberg, Sanford D., DT Liquidating Partnership and Schiffman, Murray M., jointly. Speech compressor-expander. 3,828,361, Cl. 360-25.000.
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Scholz, Robert H. Combine control. 3,827,442, Cl. 130-24.000.
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Schubach, Theodor C., to Rohr Industries, Inc. Method of assembling a vehicle roof and sidewall on a completed base by external joint structures. 3,827,137, Cl. 29-469.000.
Schubert, Franz: *See—*
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Schull, Robert D.; and Ichinose, Richard Y., to American Multiplex Systems, Inc. Method and apparatus for data transmission. 3,828,313, Cl. 340-147.0sy.
Schulte, Rudolf R.; and Portnoy, Harold D., said Schulte assor. to Heyer-Schulte Corporation. Plug valve for physiological shunt systems. 3,827,439, Cl. 128-350.00v.
Schultz, John Clayson; and Shyu, Tsu Pin, to Houdaille Industries, Inc. Damping system especially suitable for vehicle suspensions. 3,827,681, Cl. 267-8.00b.
Schultz, Robert S., to Eyelet Specialty Company. Tool for sealing a pressure-operated dispensing container. 3,827,212, Cl. 53-88.000.
Schultz, Robert S., to Eyelet Specialty Company. Pressure operated container for dispensing viscous products. 3,827,607, Cl. 222-389.000.
Schultze, Manfred: *See—*
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Schumacher, Frederick A.; and Wolds, Keith H., to Silicon Technology Corporation. Hydraulic blade mount. 3,827,421, Cl. 125-15.000.
Schumacher, William Ludlow, to AMP Incorporated. Electrical terminal for a braided shield on a coaxial cable. 3,828,298, Cl. 339-14.00r.
Schuman, Mark. Oscillating bellows. 3,827,675, Cl. 356-85.000.
Schuon, Eberhard; and Wandel u. Goltermann. Electric meter with logarithmically indicating digital reader. 3,828,255, Cl. 324-132.000.
Schwanauer, Francis J., to Burroughs Corporation. Clock and sector mark generator for rotating storage units. 3,828,271, Cl. 331-784.000.
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Schwartz, William F.; and Butler, Robert W., said Schwartz assor. to GTE Information Systems Incorporated. Double density to NRZ code converter. 3,828,344, Cl. 340-347.0dd.
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Schwerin, Siegfried; Deubel, Reinhold; and Thilenius, Thilo, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing pigment compositions. 3,827,902, Cl. 106-308.00n.
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Scott, Charles D., to United States of America, Atomic Energy Commission. Impregnated chemical separation particles. 3,827,989, Cl. 260-2.10e.
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Scott Paper Company: *See—*
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Kreider, Eunice M., 3,828,065.
Seborg, Earnest Y.; and Wanke, Harold R., to Greenlee Bros. & Co. Clamping frame for plastic sheet material. 3,827,683, Cl. 269-9.000.
Seco Maschinenbau GmbH & Co. KG: *See—*
Biesinger, Erwin, 3,827,476.
Seidel, David Paul, to Victor Limited. Safety guards for rotary lawnmowers. 3,827,220, Cl. 56-320.200.
Seifert, Volker: *See—*
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Sekisui Kagaky Kogyo Kabushiki Kaisha: *See—*
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Selman, Jan R.: *See—*
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Semonovich, Joseph. Star type ornamental structure. 3,828,182, Cl. 240-101.00s.
Serfass, Earl J.; Lindsay, Edward R., Jr.; Holmes, Gene Myron; Aid, James D.; and Bishop, French, Jr., to Roy, Milton, Company. Deaerator for dialysis system. 3,827,561, Cl. 210-180.000.
Seta, Carlo N. Undercollar construction and method for making same. 3,827,084, Cl. 2-98.000.
Settlemyer, Bernard W., to Ajax Magnethermic Corporation. Valveless low pressure air dehumidifier. 3,827,218, Cl. 55-179.000.
Seymour, Merrit W.; and Clark, Jerri O., to Owens-Corning Fiberglas Corporation. Bathtub and wall enclosure. 3,827,086, Cl. 4-175.000.
Shade, Ross A.: *See—*
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Shaffer, John W.; and Vetere, John J., to GTE Sylvania Incorporated. Photoflash lamp coating. 3,827,850, Cl. 431-94.000.
Shaffer, Walter M., to Towmotor Corporation. Low cost auxiliary hydrostatic drive for trucks. 3,827,528, Cl. 180-44.00m.
Shannon, Daniel C., to Massachusetts Institute of Technology. Respiratory device and procedure. 3,827,433, Cl. 128-145.500.
Sharp, Herbert John; and Humphrey, Victor William Stanley, to ARO Plastics Development Limited. Composite frame member with bushed aperture. 3,827,207, Cl. 52-727.000.
Shaw, Benjamin Chandler, to Bendix Corporation, The. Boost circuit for saturating output stages of high power amplifiers. 3,828,207, Cl. 307-254.000.
Sheldon, E. H., and Company: *See—*
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Shelffo, Loren E.; and Mathisen, Henry A., to Addressograph-Multigraph Corporation. Copier-duplicator machine. 3,827,803, Cl. 355-3.00r.
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Meier, Dale J.; and Kruka, Vitold R., 3,827,447.
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Whitten Gary Z.; and Rowe, Donald H., 3,827,970.
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Sheppard, William L. Fluid valves. 3,827,456, Cl. 137-525.000.
Sherby, Oleg D.; Huseby, Irvin C.; and Whalen, Robert E., to United States of America, Navy. Method of making a composite alloy. 3,827,921, Cl. 148-11.50r.
Sherwin-Williams Company: *See—*
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Shiina, Masaru, to Hitachi Ltd. Liquid chromatography. 3,827,303, Cl. 73-422.0gc.
Shimizu, Yoshiaki; Tatano, Toshio; Akiyama, Yoshiyuki; and Yamaguchi, Akira, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing cyclic adenosine monophosphate. 3,827,936, Cl. 195-28.00n.

Shimoda, Yasunori; and Taniguchi Kojiro, to Nissan Motor Company, Limited. Method for forming a wear-resistant surface on a metal article. 3,827,920, Cl. 148-15.500.

Shimotake, Hiroshi: *See—*
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Shinohara, Isao; Tsuchida, Eishun; and Mizoguchi, Katsuhiro, to Nippon Electric Company Limited. Electroconductive high polymer composition. 3,828,008, Cl. 260-78.40n.

Shiosaka, Makoto: *See—*
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Shiozawa, Kaoru; Shirato, Tsugio; and Hirose, Kiyoshi, to Mitsui Shipbuilding and Engineering Co., Ltd. Bent pipe assembling apparatus. 3,827,126, Cl. 29-200.00p.

Shipes, Kelly V., to Hudson Products Corporation. Axial flow fan assembly. 3,827,825, Cl. 415-219.000.

Shirato, Tsugio: *See—*
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Shirey, John E.: *See—*
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Shum, Edward K.: *See—*
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Shuman, Richard F., to Merck & Co., Inc. Method for the preparation of 2-acetamidoethyl (4-chlorophenyl)-alpha;haloacetate. 3,828,088, Cl. 260-453.00r.

Shyu, Tsu Pin: *See—*
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Sacks, Sidney M.; Brand, Arnold J.; and Slump, William R., 3,828,347.
Vandling, John M., 3,828,185.

Sinner, Karl-Helmut, to Hoesch Werke Aktiengesellschaft. Hydrostatic bearing. 3,827,767, Cl. 308-9.000.

Sintokogio, Ltd: *See—*
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Skagerlund, Lars-Erik, to Aktiebolaget Bofors. Device for facilitating the adjustment of an optical system. 3,827,806, Cl. 356-138.000.

Skelton, John; and Freeston, W. Denney, Jr., to United States of America, Air Force. Thermal stabilization of polybenzimidazole fiber fabrics. 3,827,904, Cl. 117-7.000.

SKF Industrial Trading and Development Company B.V.: *See—*
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SKF Industrial Trading and Development Company, N.V.: *See—*
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Sladek, Norbert J.; Petti, Pasquale Ralph; and Zerlin, William Max Erich, to Bunker Ramo Corporation. Coaxial connector. 3,828,303, Cl. 339-177.00r.

Slagel, Robert C.: *See—*
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Sletzinger, Meyer: *See—*
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Smalley, Rodney Roger; Staudinger, John Vendel; Smith, Harvell Morton; and Meeker, Brian Lee, to Johns-Manville Corporation. Method and apparatus for packaging flexible duct. 3,827,210, Cl. 53-24.000.

Smith, Arthur H., to Wagner Electric Corporation. Automotive security system and solenoid lock for same. 3,827,526, Cl. 180-114.000.

Smith, Carl G. Lock for trap shot guns. 3,827,171, Cl. 42-69.00b.

Smith, Harvell Morton: *See—*
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Smith, Jack, to Eddy Match Company, Limited. Ice skate sharpening apparatus. 3,827,185, Cl. 51-5.000.

Smith, James: *See—*
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Smith, John R., to Parke, Davis & Company. Strip chart recording roll and system for supporting roll during recording. 3,827,544, Cl. 197-133.00r.

Smith, Willard G.: *See—*
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Snam Progetti, S.p.A.: *See—*
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Snarr, James L., to Picker Corporation. Cassette unloader. 3,828,195, Cl. 250-468.000.

Sneed, Joe W.: *See—*
Rochon, Robert W.; and Sneed, Joe W., 3,827,295.

Snider, John R. Vehicular exerciser apparatus. 3,827,519, Cl. 180-25.00r.

Snow, Gerald A.; and Orlovsky, Vladimir W. Rotary printer for use in conjuction with an indexed conveyor. 3,827,356, Cl. 101-35.000.

Snow, Roland B.: *See—*
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Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
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Societe Anonyme dite "ETUD": *See—*
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Societe C. M. V.: *See—*
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Societe Generale de Recherches et d'Applications Scientifiques (SOGERAS): *See—*
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Societe Rhodiaceta: *See—*
Vidal, Roger; and Gourmandy, Raymond, 3,827,113.

Solomon, Archie. Shelf rack. 3,827,376, Cl. 108-91.000.

Soma, Hisashi, to Mitsui Shipbuilding and Engineering Co., Ltd. Cargo vessel. 3,827,385, Cl. 114-85.000.

Somers, Stanley Brice Lascelles. Cassette containing two hubs carrying a magnetic tape, for use with recording/reproducing apparatus. 3,828,363, Cl. 360-60.000.

Sondergard, Richard D.: *See—*
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Sorenson, Jess Frank, to Sorenson Engineering, Inc. Automatic lathe with rotary cutter. 3,827,318, Cl. 82-1.00c.

Sosalla, Harry, to Royal Industries, Inc. Mounting clamp for spring tooth. 3,827,505, Cl. 172-707.000.

Sostero, Carlo. Record sequentially positioning device for automatic phonograph record players. 3,827,698, Cl. 274-10.00s.

Southwire Company: *See—*
Chia, Enrique C., 3,827,881.
Schoerner, Roger J., 3,827,225.

Specialty Products Development Corporation: *See—*
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Spelman, Dennis Gerald; Kent, Bromley; and JOnes, David Thomas, to Viscose Development Company, Limited. Tamper proof secondary closure device. 3,827,591, Cl. 215-7.000.

Sperry Rand Corporation: *See—*
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Blanshine, Allison W.; Crane, Jack W.; and Mast, Aquila D., 3,827,223.
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Spietschka, Ernst; and Landler, Josef, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing compounds of the benzothioxanthene series. 3,828,072, Cl. 260-328.000.

Spiteri, Joseph, to Rem Research, Inc. Ballast circuit for a plurality of lamps. 3,828,221, Cl. 315-161.000.

Sponholz, Richard: *See—*
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Sprague Electric Company: *See—*
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Sprague, James M.; and Ziegler, Carl, to Merck & Co., Inc. N-Acyl and N-pyridylcarbonyl of sulfonyl mono-or di-substituted sulfamoylbenesulfonamides. 3,828,054, Cl. 260-294.80f.

Spreitzhofer, Ernst: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
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Stafford, John P.; Cuccio, Allen B. J.; and Johnson, J. Arthur, to Honeywell Information Systems, Inc. Universal interface system using a controller to adapt to any connecting peripheral device. 3,828,325, Cl. 340-172.500.

Stage, Leo J., to Arvey Corporation. Method of making a package. 3,827,341, Cl. 93-35.00r.

Stagi, Mauro, to Ciba-Geigy AG. 1,3-Diarylhexahydroindazole derivatives as optical brighteners. 3,828,069, Cl. 260-310.00d.

Stampfli, Harald, to Lucifer S.A. Electromagnetically controlled fluid-operating valve. 3,827,672, Cl. 251-129.000.

Stana, Regis R.; and Markind, Joseph, to Westinghouse Electric Corporation. Process for cleaning reverse osmosis membranes. 3,827,976, Cl. 210-23.000.

Stanberry, William R., Jr.: *See—*
Stanberry, William R., Sr.; and Stanberry, William R., Jr., 3,827,391.

Stanberry, William R., Sr.; and Stanberry, William R., Jr. Hydrofoil vehicle. 3,827,391, Cl. 115-70.000.

Starrett, Rupert M. Automatic key-selector key case. 3,827,263, Cl. 70-456.00r.

Staudinger, John Vendel: *See—*
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Steele, Duane F., to Tecumseh Products Company. Compressor construction. 3,827,314, Cl. 74-606.000.

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Stepan Chemical Company: *See—*
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Stephany, Christian; Braunmiller, Heinz; and Katzer, Johannes, to Kupex AG. Sprinkler systems. 3,827,637, Cl. 239-242.000.

Stephenson, Jack G.: *See—*
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Sterling Radiator Co., Inc.: *See—*
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Stevens, Joe E.: *See—*
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Stevens, Ray C.; and Stevens, Joe E. Truck mounted wrapper cable storage means. 3,827,650, Cl. 242-86.50r.

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Stewart, Ronald D.: *See—*
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Stiefel, Harold A., Jr. Volumetric filling device. 3,827,610, Cl. 222-440.000.

Stirewalt, Homer A. Electronic executing device for moles, gophers and the like. 3,827,176, Cl. 43-98.000.

Stone & Webster Engineering Corporation: *See—*
Nygaard, Harold A.; and Rubin, Jacob N., 3,827,245.

Stookey, Stanley D.: *See—*
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Stopper, Herbert, to Burroughs Corporation. Logic circuit using a current switch to compensate for signal deterioration. 3,828,202, Cl. 307-218.000.

Storkh, Bengt Rudolf. Stop devices. 3,827,686, Cl. 269-315.000.

Storzel, Karl: *See—*
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Stover, Jordan H., III, to Rockford Screw Products Company. Apparatus for making self-locking bolts. 3,827,268, Cl. 72-90.000.

Strange, John, to Firth Cleveland Fastinings Limited. Spring clips. 3,827,815, Cl. 403-397.000.

Stratienko, Andrew; and Kornsey, Robert J., to Philadelphia Gear Corporation. Tug/barge latching mechanism. 3,827,407, Cl. 114-235.00a.

Stratman, Jerome F.; and Novak, John, to Toppan Company, The. Refuse compactor container assembly. 3,827,352, Cl. 100-229.00a.

Straub, Steffen, to Bosch, Robert, GmbH. Hydraulic system for automatically adjusting the positions of headlights of an automobile. 3,828,179, Cl. 240-7.11j.

Strbik, Joseph J.: *See—*
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Strick, Karl H., to Fram Corporation. Flexible bladed fan with strengthened leading edge. 3,827,826, Cl. 416-132.000.

Strong, Jerry G., to Mobil Oil Corporation. 2-Aryl-3-aliphatictthioacrylonitriles. 3,828,091, Cl. 260-465.00f.

Struben, Francis L., to Silver Top Manufacturing Company, Inc. Skirting for below dwelling. 3,827,201, Cl. 52-169.000.

Struthers Patent Corporation: *See—*
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Stryczek, Leon K. Automatic filling ruling pen with auxiliary control valve. 3,827,813, Cl. 401-151.000.

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Sugimoto, Hiroshi: *See—*
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Sugimoto, Kaname; Hirao, Mamoru; and Masuda, Kazuo, to Hayashibara Company. Preparation of α-1,6-glucosidase. 3,827,940, Cl. 195-66.00r.

Sugino, Osakazu: *See—*
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Sugiyama, Kohei: *See—*
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Sugiyama, Motoaki: *See—*
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Sullivan, Kevin J.: *See—*
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Sumitomo Chemical Company, Ltd.: *See—*
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Sun Chemical Corporation, mesne: *See—*
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Sun Oil Company (Delaware): *See—*
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Sun Oil Company of Pennsylvania: *See—*
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Sun Research and Development Company: *See—*
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Sundstrand Data Comtrol, Inc.: *See—*
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Suttan, Franz; Veit, Paul; and Rauber, Oskar, to Maschinenfabrik Hasenclever GmbH. Method of and apparatus for the upsetting of bars and similar workpieces. 3,827,275, Cl. 72-342.000.

Sutton, Robert G., to Norwood Industries, Inc. Production of polyurethane film/split leather laminates. 3,827,930, Cl. 161-64.000.

Suut, Nikolai Karlovich: *See—*
Schedrovitsky, Savely Solomonovich; Mash, Dmitry Matveevich; Golovko, Zoya Ivanovna; Goncharevich, Leonid Fomich; Lebedev, Alexei Pavlovich; Dubrovin, Jury Mikhailovich; and Suut, Nikolai Karlovich, 3,828,339.

Suzuki, Ichiro; and Watanabe, Hiroyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Structural frame capable of absorbing impact energy. 3,827,712, Cl. 280-106.00r.

Swenson, Emil S.: *See—*
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Swenson, Henry F. Axially actuated back spot facing tool. 3,827,821, Cl. 408-59.000.
Swered, Paul: *See—*
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Tadanier, John Soloman; and Martin, Jerry Roy, to Abbott Laboratories. 10,11-Anhydroerythromycins. 3,828,022, Cl. 260-210.00e.
Tahara, Tetsuya: *See—*
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Tajkowski, Edward G.: *See—*
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Takahashi, Kentaro; Hasegawa, Minoru; and Nara, Kaoru, to Nippon Piston Ring Co., Ltd. Thermal and abrasion resistant sintered alloy. 3,827,863, Cl. 29-182.000.
Takahashi, Yasuhiro; and Saita, Osamu, to Ricoh Co., Ltd. Developer apparaus. 3,827,394, Cl. 118-2.000.
Takatsu, Mitsumune: *See—*
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Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Apparatus for transferring electrostatic latent images in electrophotographic copiers of image transfer type. 3,827,800, Cl. 355-3.00r.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Electrophotographic copier of image transfer type. 3,827,801, Cl. 355-15.000.
Tanaka, Tatsuro; Terada, Masaki; Takatsu, Mitsumune; and Otani, Shohei, to Nissin Shokuhin Kaisha, Ltd. Process for making a protease for foodstuffs. 3,827,939, Cl. 195-66.00r.
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Tarter, James H., to Continental Oil Company. Vehicle and vehicle control system. 3,827,454, Cl. 137-344.000.
Tartter, Arnold, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Alkoxyalkylamino salts of disazo acid dyes. 3,828,020, Cl. 260-191.000.
Tatano, Toshio: *See—*
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Tax, Hans. Partly reversible auditorium. 3,827,199, Cl. 52-10.000.
Taylor, Anna J. Thread dispensing bobbin. 3,827,653, Cl. 242-137.100.
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Terral, Ben D., to Camco, Incorporated. Latch for retrievable flow control devices. 3,827,493, Cl. 166-215.000.
Terwilliger, James P.; Gingello, Anthony D.; and Tinney, John R., to Eastman Kodak Company. Apparatus and process for combining chemically compatible solutions. 3,827,888, Cl. 96-107.000.
Terzuoli, Dominick. Apparatus for producing paper bags. 3,827,396, Cl. 118-44.000.
Tex, Karel Den; Jensen, Donald F.; Ricklefs, Merlin J.; Saltz, Fred; Schmidt, Jon J.; and Stacy, Phillip S., to International Business Machines Corporation. Pneumatically controlled document card punch. 3,827,628, Cl. 234-18.000.
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Thaler, Sherwood S. Level sensing device with capacitive gaging transducer. 3,827,300, Cl. 73-304.00c.
Theriault, Robert John; and Kohl, William Leonard, to Abbott Laboratories. Microbial conversion of 11-acetylerythromycin B to erythromycin B. 3,827,941, Cl. 195-80.000.
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Thomas, Robert J., to Dow Chemical Company, The. Polyesters prepared from bisphenols and isopropylidene bis (p-phenyleneoxy) diacetyl chloride. 3,828,006, Cl. 260-47.00c.
Thompson, Floyd G. Binary organ and coding system for operating same. 3,828,108, Cl. 84-1.010.
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Thompson, Robert M., to Sun Research and Development Company. Tertiary diamide lubricants. 3,827,981, Cl. 252-51.50a.
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Throckmorton, Peter E.; McKillip, William J.; and Slagel, Robert C., to Ashland Oil, Inc. Process of reacting isocyanate or isothiocyanate and compositions therefor. 3,828,007, Cl. 260-75.0nb.
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Tixier, Rene, to Societe Generale de Recherches et d'Applications Scientifiques (SOGERAS). Alkylsulfonic derivatives of quinine alkaloids. 3,828,048, Cl. 260-284.000.
Tokyo Shibaura Electric Company, Ltd.: *See—*
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Tomcufcik, Andrew Stephen; Izzo, Patrick Thomas; and Fabio, Paul Frank, to American Cyanamid Company. 6-Substituted 3-nitroimidazo (1,2-beta) pyridazines and method of preparing same. 3,828,041, Cl. 260-250.0ac.
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Toti, Andrew J. Row crop harvesting machine. 3,827,222, Cl. 56-330.000.
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Townsend, Warren R., Jr. Carrier apparatus for motor vehicles. 3,827,589, Cl. 214-450.000.
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Trocqueme, Fancois Jean, to Entreprise de Recherches d'Activites Petrolieres Elf. Device for the automatic adjustment of the amplitude of signals. 3,828,262, Cl. 328-175.000.
Tropp, Karl; Durth, Wilfried; and Jakob, Heinrich, to Burger Eisenwerke Aktiengesellschaft. Food-treatment apparatus with grease-collection hood for air circulator. 3,827,346, Cl. 99-446.000.
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Gutshall, Richard L.; McConaughey, Randall T.; and Volpe, Frank A. Star scanner. 3,827,807, Cl. 356-141.000.
Lindsey, William C.; and Simon, Marvin K. Coherent receiver employing nonlinear coherence detection for carrier tracking. 3,828,138, Cl. 179-15.0bc.
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Van Horn, Robert Eldon. Intensifier system. 3,827,830, Cl. 417-225.000.

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Venanzetti, Michele, to Venanzetti Vibrazioni S.p.A. Particulate material conveyor. 3,827,159, Cl. 34-164.000.

Venanzetti Vibrazioni S.p.A.: *See—*
Venanzetti, Michele, 3,827,159.

Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung: *See—*
Schwarzler, Hans-Jurgen, 3,827,657.

Vereinigte Osterreichische Eisen-und Stahlwerke Alpin Montan Aktiengesellschaft: *See—*
Enkner, Bernhard, 3,827,583.

Vetco Offshore Industries, Inc.: *See—*
Hynes, Joseph H., 3,827,728.

Vetere, John J.: *See—*
Shaffer, John W.; and Vetere, John J., 3,827,850.

Vicra Sterile, Inc.: *See—*
Thompson, Thomas C., 3,827,434.

Victor Limited: *See—*
Seidel, David Paul, 3,827,220.

Vidal, Roger; and Gourmandy, Raymond, to Societe Rhodiaceta. Process for simultaneously texturizing a plurality of yarns. 3,827,113, Cl. 28-72.140.

Vigil, Jacob F.; Billard, Stephen L.; Oropesa, Joel T.; and Armstrong, Ralph W., Jr., to Burroughs Corporation. Fail-soft interrupt system for a data processing system. 3,828,324, Cl. 340-172.500.

Villar Echevarria, Jesus; and Villar Lopez, Jesus. Geographical timepiece or clock. 3,827,233, Cl. 58-44.000.

Villar Lopez, Jesus: *See—*
Villar Echevarria, Jesus; and Villar Lopez, Jesus, 3,827,233.

Vinten, W., Limited: *See—*
Wolff, Heinz, 3,828,252.

Virnoche, Paul R.: *See—*
Kufrin, Frederick W.; Virnoche, Paul R.; Allen, Donald J.; Gokey, Phillip E.; and Rose, Frederick A., 3,827,378.

Viscose Development Company, Limited: *See—*
• Spelman, Dennis Gerald; Kent, Bromley; and JOnes, David Thomas, 3,827,591.

Visser, Peter J., to Clark Equipment Company. Load handling apparatus. 3,827,743, Cl. 294-67.0bb.

Vitali, Romano: *See—*
Ercoli, Alberto; Gardi, Rinaldo; and Vitali, Romano, 3,828,081.

Vitzthum, Otto; Hubert, Peter; and Barthels, Manfred, to Hag Aktiengesellschaft. Flame ionization detector for supercritical fluid chromatography. 3,827,859, Cl. 23-254.0ef.

Vocon, Inc.: *See—*
Grolitzer, Arthur J., 3,828,186.

Voegeli, Ernst, to Faltag AG. Mobile room dividing structure. 3,827,196, Cl. 52-64.000.

Vogelgesang, Peter J.; Alexander, Jerry L.; and Lunquist, Frank C., to Minnesota Mining and Manufacturing Company. Template for a graphic forming device. 3,828,359, Cl. 354-15.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Kirsch, Klaus; and Grotewold, Werner, 3,828,247.

Volpe, Frank A.: *See—*
United States of America, National Aeronautics and Space Administration, 3,827,807.

Volsy, Robert, to Commissariat a l'Energie Atomique. Electrostatic precipitator for the collection of particles contained in a gas. 3,827,217, Cl. 55-121.000.

Von Bonin, Wulf, to Bayer Aktiengesellschaft. Production of foamed silicate moldings where the foamable composition is gelled prior to foaming. 3,827,869, Cl. 65-22.000.

Von Hagen, Wolf-Rudiger: *See—*
Baanstra, Theo Meindert; Von Hagen, Wolf-Rudiger; and Niem, Wolfgang, 3,827,381.

Voorhees, Steven C.: *See—*
Liberman, Harvey W.; Harvey, Samuel E.; and Voorhees, Steven C., 3,827,587.

Voronoff, George N., to Textron, Inc. Broadband spiral antenna. 3,828,351, Cl. 343-740.000.

Vralstad, Tor: *See—*
Johnsen, John Normann; and Vralstad, Tor, 3,827,143.

Vutz, Norman; and Brown, Donald, to Westinghouse Air Brake Company. Fluid pressure system for converting digital signals to analog signals. 3,827,457, Cl. 137-599.000.

Waak, Gerald A., to Aluminum Specialty Company. Toy mixer. 3,827,824, Cl. 415-69.000.

Wagner Electric Corporation: *See—*
Atkins, Carl E., 3,828,273.
Fleagle, Joseph E., 3,827,760.
Smith, Arthur H., 3,827,526.

Wahl, Josef: *See—*
Linder, Ernst; Zechnall, Richard; Wahl, Josef; and Schmidt, Peter Jurgen, 3,827,237.

Waitzman, Dennis Carl, to Chrysler Corporation. Exhaust recirculation. 3,827,412, Cl. 123-119.00a.

Walbrohl, Heinz-Theo. Form for producing a concrete lining of mine galleries tunnels, shafts or the like. 3,827,244, Cl. 61-84.000.

Waldes Kohinoor, Inc.: *See—*
Erdmann, Hans, 3,827,598.

Walford, Gordon L.: *See—*
Beattie, Thomas R.; Ruyle, William V.; Shen, Tsung-Ying; Walford, Gordon L.; and Walton, Edward, 3,828,021.

Walker, Charles E.: *See—*
Finley, John W.; Hautala, Earl; and Walker, Charles E., 3,828,017.

Walker, Dale E., to Peabody Gordon-Piatt, Inc. Combination, oil, gas and/or solid burner. 3,827,851, Cl. 431-175.000.

Wallace, Leonard M., to Iowa State University Research Foundation, Inc. System for remote monitoring of tower lighting system. 3,828,334, Cl. 340-251.000.

Walldorf, Juan Belart, to ITT Industries, Inc. Master cylinder for a two-circuit brake system. 3,827,242, Cl. 60-552.000.

Wallshein, Melvin. Orthodontic coil and retaining device utilizing the same. 3,827,146, Cl. 32-14.00e.

Walters, Fred L., to Thiokol Chemical Corporation. Sealed joint for sectionalized flooring and method of making the same. 3,827,204, Cl. 52-396.000.

Walters, Russell W., to BMR Security Products Corporation. Bar lock assembly. 3,827,266, Cl. 70-104.000.

Walton, Edward: *See—*
Beattie, Thomas R.; Ruyle, William V.; Shen, Tsung-Ying; Walford, Gordon L.; and Walton, Edward, 3,828,021.
Wandel u. Goltermann: *See—*
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Wanke, Harold R.: *See—*
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Warburton, Joe Allen; and Wilson, Henry Lewis, to General Electric Company. High temperature resistant electrical conductor, and method of producing same. 3,828,119, Cl. 174-121.00a.
Ward, Daniel. Music teaching device. 3,827,330, Cl. 84-472.000.
Ward Foods, Inc.: *See—*
Farmer, John, 3,827,909.
Ward, Henry D., Jr.; Ward, William F.; and Taber, Clyde E., III. Automatic stack feeder. 3,827,576, Cl. 214-6.00d.
Ward, Robert L.; and Welch, Willie M., 50% to Gang-Nail Truss Company. Trim saw mounting bracket assembly. 3,827,325, Cl. 83-461.000.
Ward, Stanley H., to Varian Associates. Apparatus and method for electromagnetic geophysical exploration. 3,828,243, Cl. 324-.50r.
Ward, William F.: *See—*
Ward, Henry D., Jr.; Ward, William F.; and Taber, Clyde E., III, 3,827,576.
Waring, Wilson Shaw: *See—*
Kay, Ian Trevor; Peacock, Frederick Charles; and Waring, Wilson Shaw, 3,828,043.
Warneke, Richard J. Device for attachment to the wheel of a bicycle. 3,827,178, Cl. 46-191.000.
Warner-Lambert Company: *See—*
Ercoli, Alberto; Gardi, Rinaldo; and Vitali, Romano, 3,828,081.
Zinnes, Harold; and Lindo, Neil A., 3,828,055.
Zinnes, Harold; and Lindo, Neil A., 3,828,073.
Warning, Clair J.: *See—*
Hudson, Robert M.; Perry, Paul E.; and Warning, Clair J., 3,827,903.
Warwick Electronics, Inc.: *See—*
Konopka, John G., 3,828,205.
Wasley, William L.: *See—*
Pittman, Allen; and Wasley, William L., 3,828,087.
Pittman, Allen G.; Wasley, William L.; and Jones, Carlton C., 3,828,005.
Wasson, Burton Kendall; and Rooney, Clarence Stanley, to Merck Sharp & Dohme (I.A.) Corporation. 3-(3-Substituted amino-2-hydroxypropoxy)-2-substituted-4-pyranones. 3,828,076, Cl. 260-345.900.
Watanabe, Hiroyuki: *See—*
Suzuki, Ichiro; and Watanabe, Hiroyuki, 3,827,712.
Watson, M. J.; d/b/a: *See—*
Geihl, Jerry L., 3,827,198.
Watt, Gordon James. Flexible membrane bearing. 3,827,766, Cl. 308-9.000.
Waugh, Jerry, to Mallory, P. R., & Co. Inc. Head cleaner for cassette tapes. 3,827,699, Cl. 274-47.000.
Wazawa, Kiyoshi: *See—*
Baba, Kosaku; Wazawa, Kiyoshi; and Hosaka, Akio, 3,828,294.
Weaver, Lumon D. Apparatus for forming box-like article and lid therefor. 3,827,847, Cl. 425-424.000.
Webb, Robert F., to General Electric Company. Portable microwave radiation sensing and measuring device. 3,828,251, Cl. 324-72.000.
Weber, Joseph P.: *See—*
Houlgrave, Robert C.; and Weber, Joseph P., 3,827,673.
Wechsler, Richard L., to Bethlehem Steel Corporation. Apparatus for shrinking collars on a shaft. 3,827,134, Cl. 29-252.000.
Wed. Joh. Verhulst en Zonen B.V.: *See—*
Doomernik, Cornelis, 3,827,257.
Weigh-Tronix, Inc.: *See—*
Bradley, Richard S., 3,827,514.
Weigh-Tronix Incorporated: *See—*
Bradley, Richard S., 3,828,295.
Weiler, Herold J.; and Weiler, John E. Apparatus for making cured tire tread strip. 3,827,846, Cl. 425-371.000.
Weiler, John E.: *See—*
Weiler, Herold J.; and Weiler, John E., 3,827,846.
Weiner, Robert I.: *See—*
Weiner, Robert I.; Hoge, Henri H.; and Dussan V, Benicio I., 3,827,477.
Weiner, Robert I.; Hoge, Henri H.; and Dussan V, Benicio I., to Weiner, Robert I. Method of heating alcoholic beverages. 3,827,477, Cl. 165-1.000.
Weisz, Paul B.: *See—*
Heinemann, Heinz; and Weisz, Paul B., 3,827,867.
Welch, Willie M.: *See—*
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Welding Institute, The: *See—*
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Welke, Wolfgang: *See—*
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Welkowsky, Murray Samuel: *See—*
Eseke, James Richard; Morsell, Arthur Lee; Muntz, Eric Phillip; and Welkowsky, Murray Samuel, 3,828,191.
Welland, John Michael, to Perkin Elmer Limited. Electrical flow-meters. 3,827,299, Cl. 73-204.000.
Welsh, Emery H. Spare tire enclosure. 3,827,521, Cl. 180-54.00a.
Wendelin, Pauli O.: *See—*
Ringley, Michael B.; and Wendelin, Pauli O., 3,827,934.
Wengel, Gunter, to Memory-Plastic Gunter Wengel. Construction game. 3,827,177, Cl. 46-31.000.
Wennerberg, Gunnar. Apparatus for measuring a predetermined characteristic of moving sheet material which accommodates both tilting and changes in thickness and vertical location of the material. 3,828,248, Cl. 324-34.0tk.
Wennes, Stephen B., to Rogers, Dayton, Manufacturing Company. Cam stop positioning apparatus. 3,827,685, Cl. 269-229.000.
Wenzel, Dr.-Ing.: *See—*
Wenzel, Werner; Meraikib, Mohammed; Franke, Friedrich H.; and Konig, Horst, 3,827,878.
Wenzel, Ronald A., to Hilsinger Corporation, The. Spectacle holder. 3,827,790, Cl. 351-123.000.
Wenzel, Werner; Meraikib, Mohammed; Franke, Friedrich H.; and Konig, Horst, 33 1/3% to Demag A.G., 33 1/3% to Rheinische Braunkohlenwerke AG. and 33 1/3% to Wenzel, Dr.-Ing. Methods and apparatus for the reduction of metal ores, particularly iron ores. 3,87,878, Cl. 75-34.000.
Wescom, Inc.: *See—*
Bradbery, Jack L.; Andersen, Todd G.; and Fechalos, William A., 3,828,314.
Western Electric Company, Incorporated: *See—*
Boggs, Luther Miles; Flichman, Howard John; and Hudson, James Alphus, Jr., 3,827,287.
Westinghouse Air Brake Company: *See—*
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Noble, Peter M., 3,827,533.
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Westinghouse Electric Corporation: *See—*
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Fluet, Francis A., 3,828,169.
Luck, Russell M.; and Gainer, Gordon C., 3,828,000.
Stana, Regis R.; and Markind, Joseph, 3,827,976.
Westinghouse Learning Corporation: *See—*
Parks, James D., 3,827,320.
Westlinning, Hermann; Schwarze, Werner; and Fleischhauer, Horst, to Deutsche Gold-und Silber-Scheidean-stalt vormals Roessler. Rubber stabilized with phenylenediamine-s-triazines. 3,828,002, Cl. 260-45.80n.
Weston, David Frederick, to Imperial Chemical Industries Limited. Applicator for surgical clips. 3,827,277, Cl. 72-410.000.
Weston Instruments, Inc.: *See—*
Lehmann, Joseph L., 3,828,127.
Westvaco Corporation: *See—*
Ringley, Michael B.; and Wendelin, Pauli O., 3,827,934.
Whalen, Robert E.: *See—*
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Whalley, Norman: *See—*
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Wheeler, Bryce A., to Hughes Aircraft Company. Dual imaging concentric optics. 3,827,778, Cl. 350-55.000.
Wheeler, James E., to Bethlehem Steel Corporation. Method and device for retaining material within a plunging bell. 3,827,680, Cl. 266-34.00t.
Wheeling-Pittsburgh Steel Corporation: *See—*
Norteman, Samuel L., 3,827,139.
Whirlpool Corporation: *See—*
Janke, Donald E., 3,827,600.
Nordeen, Erwin E.; and JOhnson, Milton J., 3,827,103.
White, James T.; and Gumprecht, Donald L., to Reichhold Chemicals, Inc. Copolymer blends and method of making same. 3,827,995, Cl. 260-29.40r.
Whitley, William P., Jr. Prow tie-down device for boat trailers. 3,827,717, Cl. 280-179.00r.
Whittaker, Dewey E.: *See—*
Johanson, Hans A.; Whittaker, Dewey E.; and Phillippi, Larry R., 3,828,112.
Whitten Gary Z.; and Rowe, Donald H., to Shell Oil Company. Jet Fuel process. 3,827,970, Cl. 208-93.000.
Wiberg, Ole. Furniture assembly. 3,827,751, Cl. 297-440.000.
Wick, Richard; Meyer, Rudolf; and Hoffmann, Klaus, to AGFA-Gevaert Aktiengesellschaft. Continuous ink-jet recording. 3,828,355, Cl. 346-75.000.
Wickuler-Kupper-Brauerei KGaA: *See—*
Heimann, Helmit, 3,827,812.
Widdig, Arno; Kuhle, Englebert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug. Hans; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Substituted ureidophenylguanidines. 3,828,094, Cl. 260-471.00c.
Widmer, Erich: *See—*
Furst, Andor; Labler, Ludwig; Meier, Werner; Muller, Peter; Scott, John William; and Widmer, Erich, 3,828,062.
Wieden, Horst; Nogaj, Alfred; and Marzolph, Herbert, to Farbenfabriken Bayer Aktiengesellschaft. High shrinkage threads, yarn and fibers from acrylonitrile polymers. 3,828,014, Cl. 260-85.50r.
Wiers, William C., to Automation Industries, Inc. Plural channel recorder. 3,828,356, Cl. 346-108.000.
Wiesner, Alfredo. Bar-cabinet for the preservation, refrigeration and distribution of alcoholic and unalcoholic drinks. 3,827,256, Cl. 62-330.000.

Wiggin, Anthony John, to GKN Sankey Limited. Washing and filling machines. 3,827,466, Cl. 141-92.000.

Wilber, John A.; Rice, Verner K.; and Buhrke, Rolfe E., to GTE Automatic Electric Laboratories Incorporated. System for reconfiguring central processor and instruction storage combinations. 3,828,321, Cl. 340-172.500.

Wilchester, Harry L.: *See—*
Dycus, Dale W.; Malmberg, Earl W.; and Wilchester, Harry L., 3,827,497.

Wilhelm, Keith A.: *See—*
Mershon, Butler A.; and Wilhelm, Keith A., 3,827,278.

Willers, Eduard, to International Harvester Company. Shift transmission with slideable gear-engaging sleeve particularly for motor vehicles. 3,827,276, Cl. 74-363.000.

Williams, A. Carey. Antistat and binder for glass fibers. 3,827,900, Cl. 106-287.00s.

Williams, Dick H., to General Motors Corporation. Engine cooling from exhaust gas turbine. 3,827,523, Cl. 180-68.00r.

Williams, George H., to Burrard Refrigeration Ltd. Chiller for ice rink refrigeration systems. 3,827,253, Cl. 62-235.000.

Williamson, William A., to Clark Equipment Company. Vehicle drive steer wheel. 3,827,517, Cl. 180-6.480.

Willson, James R., to Robertshaw Controls Company. Computer cooking means. 3,827,345, Cl. 99-325.000.

Wilson, Henry Lewis: *See—*
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Wilson, John R.: *See—*
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Wilson, Raymond F.; Peck, Reese A.; and Mih, Li C., to Texaco Inc. Conversion of paraffins. 3,827,969, Cl. 208-89.000.

Winer, Allen; and Proodian, Robert E., to United States of America, Navy. Salvage method utilizing water emulsified polyester resin and hollow microspheres. 3,827,383, Cl. 114-50.000.

Winiarz, Olgierd S., to Garrett Corporation, The. Unidirectional diaphragm face seal. 3,827,702, Cl. 277-88.000.

Winn, Donald J., to Phelps Dodge Industries, Inc. Slide-on RF connector. 3,828,304, Cl. 339-177.00r.

Winsor, Robert Beck, to IEC-Holden Ltd. Variable force hopper gate actuating mechanism. 3,827,374, Cl. 105-282.00p.

Winther, Charles R.: *See—*
Winther, Harry C., 3,827,393.
Winther, Harry C., 3,828,149.

Winther, Harry C., 38% to Winther, Walter J., 10% to Winther, Charles R., 5% to Winther, William J. and 1% to Winther, Shirley M. Vehicle tire deflation signalling means. 3,827,393, Cl. 116-34.00r.

Winther, Harry C., 38% to Winther, Walter J., 10% to Winther, Charles R., 5% to Winther, William J. and 1% to Winther, Shirley M. Mechanically-resetting tire deflation signalling system. 3,828,149, Cl. 200-61.250.

Winther, Shirley M.: *See—*
Winther, Harry C., 3,827,393.
Winther, Harry C., 3,828,149.

Winther, Walter J.: *See—*
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Winther, Harry C., 3,828,149.

Winther, William J.: *See—*
Winther, Harry C., 3,827,393.
Winther, Harry C., 3,828,149.

Winzer, Gerhard, to Siemens Aktiengesellschaft. Coherent-optical image converter. 3,828,187, Cl. 250-213.0vt.

Wise, Kenneth J. Dresser for abrasive wheels. 3,827,422, Cl. 125-37.000.

Wixson, James D. Distillation apparatus. 3,827,945, Cl. 202-177.000.

Woelz, Donald D.: *See—*
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Wojahn, Charles W.: *See—*
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Wolds, Keith H.: *See—*
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Wolfe, Raymond: *See—*
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Wolff, Heinz, to Vinten, W., Limited. Meter with audible read-out. 3,828,252, Cl. 324-99.00d.

Wolowodiuk, Walter. Liquid metal heat exchanger. 3,827,484, Cl. 165-161.000.

Wong, Roger W.; and Stewart, Ronald D., to Hewlett-Packard Company. Microwave transistor package. 3,828,228, Cl. 317-234.00r.

Woodward, Robert Burns. Process for the temporary protection of carboxyl groups. 3,828,026, Cl. 260-239.100.

Work Right Products Inc.: *See—*
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Workman, Clark B.: *See—*
English, Myrle H.; Goodstal, Laurence; Leek, Wayne E.; Sanzo, Robert J.; Turner, Robert L.; Workman, Clark B.; and Yetter, Edward W., 3,827,334.

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Wright, Harold Austin, to Arco Polymers, Inc. Impregnation of polystyrene with trichlorofluoromethane. 3,827,990, Cl. 260-2.50b.

Wroblewski, Lawrence P.: *See—*
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Wubbe, Leo J., to Anderson Company, The. Arm mounted windshield washer jet. 3,827,101, Cl. 15-250.040.

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Wunder-Klein—Donohue Company: *See—*
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Wyche, Charlie: *See—*
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Wycoff, Keith H. Tone generator for selective call transmitter. 3,828,272, Cl. 331-40.000.

Wymore, Charles E.: *See—*
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Xenakis, James A.: *See—*
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Xerox Corporation: *See—*
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Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Kutino, Tsuyoshi, to Nippon Kokan Kabushiki Kaisha. Method of surface treating steel products with metal powder. 3,827,140, Cl. 29-487.000.

Yamaguchi, Akira: *See—*
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Yamaguchi, Hisashi: *See—*
Ishihra, Masao; Haga, Teruhide; Horiuchi, Hiroshi; Yamaguchi, Hisashi; and Sugino, Osakazu, 3,827,886.

Yamaguchi, Taihei, to Fuji Electric Company Limited. Data transmitting system. 3,828,130, Cl. 178-69.50r.

Yamaguchi, Takeshi, to Cleland, Ernest K. Apparatus for heating fluids by means of gas permeable heat generating members. 3,828,161, Cl. 219-382.000.

Yamakawa, Hiroshi: *See—*
Kawano, Reijiro; Goda, Kazuhiro; Yamakawa, Hiroshi; and Otsuka, Masayoshi, 3,827,543.

Yamamoto, Akira; Yoshida, Dan; and Onaka, Tatsumi, to Hitachi Shipbuilding and Engineering Company, Ltd. Abrasive apparatus. 3,827,187, Cl. 51-9.000.

Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, to Sumitomo Chemical Company, Ltd. Process for preparing benzodiazepine derivatives. 3,828027, Cl. 260-239.30d.

Yamamoto, Katsuro, to Bridgestone Liquefied Gas Company Ltd. Method of constructing a low temperature liquefied gas tank of a membrane type. 3,827,135, Cl. 29-455.000.

Yamamoto, Katsuro, to Bridgestone Liquefied Gas Company, Limited. Method of constructing a low temperature liquefied gas tank of a membrane type. 3,827,136, Cl. 29-455.000.

Yamamoto, Michihiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Okamoto, Tadashi; Hirohashi, Toshiyuki; Ishizumi, Kikuo; Yamamoto, Michihiro; Maruyama, Isamu; Mori, Kazuo; and Kobayashi, Tsuyoshi, 3,828,027.

Yamamoto, Takaya, to Kokusai Denshin Denwa Kabushiki Kaisha. Light amplifier using a semiconductor. 3,828,231, Cl. 357-30.000.

Yamamuro, Isao; and Obuchi, Akio, to Pioneer Electronic Corporation. Vibration absorbing support for loudspeaker voice coil bobbin. 3,828,144, Cl. 179-115.5vc.

Yamasaki, Hiroyuki; and Kaida, Masaaki, to Omron Tateisi Electronics Co. and Bridgestone Tire Company Ltd. Apparatus for detecting the internal pressure of a tire. 3,828,309, Cl. 340-58.000.

Yamashita, Swizi; and Onishi, Kazuo, to Hitachi, Ltd. Stator for low-inertia DC machines. 3,828,213, Cl. 310-254.000.

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LIST OF DEFENSIVE PUBLICATIONS

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Besser, John E., A. P. Werts, III, and J. C. Martin, Flexible polyurethane foam. T925,004, 8–6–74, Cl. 260—2.5.

Bonner, Raymond E., to International Business Machines Corp. Egg monitoring method. T925,003, 8–6–74, Cl. 444—1.

Chen, Fred F.: *See*—
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Faw, Wendell G., and R. B. Moore, Jr. Method and apparatus for forming three-dimensional crimp in yarn of continuous length filamentary thermoplastic material. T925,009, 8–6–74, Cl. 28—1.6.

Grant, Peter M.: *See*—
Harrington, Robert C., Jr., Hood and Grant. T925,008.

Haller, Henry E., III.: *See*—
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Harrington, Robert C., J. D. Hood, and P. M. Grant. Polyester-cellulose ester powder coating compositions. T925,008, 8–6–74, Cl. 260—16.

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Imperial Chemical Industries Ltd.: *See*—
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Last, Anthony Graham Marshall. Imperial Chemical Industries Ltd. Bubble magnetics. T925,007, 8–6–74. Cl. 360—115.

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Mole, Cecil J., and H. E. Haller, III. Westinghouse Electric Corp. Dynamoelectric machine with a superconductive field winding for operation in either a synchronous or an assynchonous mode. T925,001. 8–6–74, Cl. 310—52.

Moore, Robert B., Jr.: *See*—
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Moore, Robert B., Jr. Fluid jet injector device for a yarn bulking apparatus. T925,006, 8–6–74, Cl. 28—1.3.

Pierce, Harold C.: *See*—
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Rosborough, Robert S., and H. C. Pierce. Film cartridge opening device. T925,002, 8–6–74, Cl. 225—103.

Werts, Arthur P., III.: *See*—
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Day, Frederick L.: *See*—
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Long, William H., to Minnesota Mining and Manufacturing Co. Traffic signal remote control system. Re. 28,100, 8–6–74, Cl. 340—34.

Mayhew, Delbert J., to Minnesota Mining and Manufacturing Co. Filtration mask. Re. 28,102, 8–6–74, Cl. 128—146.2.

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DESIGN PATENTS

4	232,293		232,315	22	232,303		232,288	39	232,277	46	232,285
	232,294		232,317	24	232,319		232,295		232,299	47	232,307
6	232,284	13	232,320	26	232,313		232,301		232,305	48	232,280
	232,287		232,325	34	232,318		232,304		232,306		232,312
	232,308	17	232,289	36	232,278	37	232,290		232,309		232,316
	232,323		232,310		232,282		232,291	42	232,326	49	232,328
9	232,324	19	232,311		232,283		232,292		232,327	51	232,302
12	232,279	20	232,296		232,286	38	232,314	45	232,298	55	232,329

PLANT PATENTS

6	3,581	3,582	3,583	3,584	25	3,585	30	3,586

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

36	T925,002	42	T925,001	T925,005	T925,006	T925,008	T925,009
36	T925,003	47	T925,004				

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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*